

# **TAMBANGAN HEALTH CENTER MANAGEMENT SYSTEM (THCMS)**

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## **CHAPTER I**

### **INTRODUCTION**

#### **Project Context**

The information obtained from the midwife and patients is processed by the Tambangan Health Center Management System. It is a rigorous approach for improving the workflow of an organization's in terms of efficiency, effectiveness, and adaptability.

The medical staff at the Barangay Tambangan Health Center work under a manual method that makes it difficult for them to collect patient data and results in their being the least productive at a health facility. Tambangan Health Center Management System (THCMS) was suggested to be implemented in the mentioned barangay in order to enhance their community services.

PHP and MySQL were used to develop the web-based THCMS project. It is intended to store and track medical data about Barangay Tambangan residents. By doing this, patient medical data can be recorded in a more organized and effective manner.

## **Purpose and Description**

The main goal of this project is to design and create a system that can assist the assigned midwife and the patients, and make transactions simpler. The person in charge, whether the administrator or the midwife, will evaluate the data information through the database compiled from Barangay Tambangan residents.

Anyone who doesn't have time to visit the Health Center can utilize this system, a free website, to get what they need. The solution will also assist the barangay in creating a consolidated database system, which will speed up, make accessible, secure, and dependable the application.

This web-based application was developed by the proponents using PHP (PHP Hypertext Preprocessor), a server-side programming language. Markup languages include HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets).

## **Objectives**

The purpose of this project is to design and develop the Tambangan Health Center Management System to enhance record management.

1. Identify the requirements needed in the development of the system.
2. Design the major functionalities of the proposed system.
3. Develop the Tambangan Health Center Management System.

4. Evaluate the system in terms of usability, efficiency, and reliability using the ISO 9126 Software Quality Standards.

### **Scope and Limitations**

The design and development of the Tambangan Health Center Management System was the main emphasis of this web-based system project. This contains all of the Barangay Tambangan residents' relevant medical information. In the suggested approach, data and records are computerized and saved for portability and accessibility. The secure log-in system's proponents, however, only allow the midwife and the authorized user to utilize it. The study did not include any additional services that the barangay provides to its citizens that are unrelated to the barangay health center.

Barangay Tambangan was the focus of this system. The designated midwife would gather the patient's information and keep it in a database for tracking and updating. The patient would provide a piece of correct information. The system would demand a correct username and password for logging in. The user experience would be responsive and consistent.

## **Significance of the Study**

The following are advantages of the proposed Tambangan Health Center Management System:

*Patients.* The patient experience is improved. They learned more about healthy nutrition.

*Health facility.* The proposed system will automate all tasks associated with health centers and help to maximize the amount of time spent with patients, leading to increased community service.

*Midwife.* The technology made it simpler for the clinic's head nurse to run things as well as more dependable and convenient for gathering patient health records.

*BHW.* The BHWs reduce their accountability.

*Researcher.* The researchers' enhanced writing, analytical, and thesis-writing abilities as well as their broader perspectives and cognitive abilities will be advantageous to our community as a whole.

*Future Scholars.* This is beneficial to other researchers who want to carry out a related study. The results will serve as background knowledge.

*Community.* They will no longer report to the health center for appointments. The proposed system can provide the information.

## **CHAPTER II**

### **REVIEW OF RELATIVE LITERATURE AND SYSTEM**

#### **Review of Related Literature**

The current study discussed in this chapter the perspective of ongoing related research. This study cited papers and systems that were relevant to the research issue.

Barangay Center Management Information System is a well-organized system that provides concise and accurate information in every parameter of the barangay center record eases the job of every administrator's nurses and prevents some stressful job problems. (Cedric Jay Falloran Karl, 2021)

The deployment of the Barangay Health Center Information System simply increases the consistency of the Barangay Dian-ay Health Center's consultation procedure. Both the Barangay Health Center and the patients benefit greatly from it. It is critical to keep track of all of the patient's medical records. Through this mechanism, it gives satisfaction and improved service to the beneficiary/community it serves. Its system-generated counsel will improve the performance of medical workers. To assist the health center of Barangay Dian-ay in achieving its purpose,

vision, and goals by offering full-hearted services to the Barangay Dian-ay community for medication/treatments. (Allura, n.d.).

According to Elsa Negro Calducha, Natasha Azzopardi-Muscat, Ramesh S. Krishnamurthy, and David Novillo-Ortiz (2021), the recent, rapid development of digital technologies offers new possibilities for more efficient implementation of electronic health records (EHR) and personal health record (PHR) systems. A growing volume of healthcare data has been the hallmark of this digital transformation. The large healthcare datasets' complexity and their dynamic nature pose various challenges related to processing, analysis, storage, security, privacy, data exchange, and usability.

Patient record system as elaborated by Alan Bingham (2008) in his book entitled "Healthcare Financial Management" is still a relatively new concept; however, such systems offer a variety of benefits to physician practices. It can help improve the quality of care provided, for example, by providing real-time patient status reports, test results as soon as they are available, and graphs and flow sheets of test trends. They can help reduce by eliminating many manual functions and the supply and staff expenses associated with these functions.

## **Review of Related System**

The “Web-based Health Monitoring System for Municipality of Sta. Cruz Health Center using Quicksort Algorithm” is a web-based system that aids the problem of health workers in terms of record handling and generating reports. The main function of the system is to monitor the morbidity status of each barangay. The system used PHP, HTML, CSS, Sublime, and XAMPP as project technology. (HF. Capoy, et al., 2019).

In the study by (M.Garcia, et al., 2021), the “B- Health - A Framework for Mobile and Web Application for Barangay Health Center in the Municipality of Laguna” is a mobile and web application for Barangay health centers in rural areas. The application improves patient monitoring and delivers health announcements to lessen their challenges throughout the rural community. It monitors the patient's medical history and conditions. The paper focuses on improving the gap between the community and health center through the implementation of the B-Health application thus this will serve as the bridge for distributing basic healthcare to all people living in the rural area.

The study of (Glenn azuelo, Feb. 2022), shows “Patient Record Management System Project In PHP”, this study is primarily concerned with the administration of patient reports. It is a web-based system that uses PHP as a programming language. The features are; User



Management, Employee Panel, View Patients Report, Print Reports, Update Accounts, Admin Panel.

The study of (Assad H Thary Al-Ghrai, et al.,2021) shows a website for medical health care system design and development. It consists of two main sides: the client-server side. They designed a web using HTML, CSS, and JavaScript languages. The web is implemented and developed by them using ASP MVC5 and C++ programming language. The SQL Server languages are used for the database part and make it simple and easy to use for patients in their health registrations. They have a combination of patient appointments, billing, timetable, physical, date, and information on medicine in a whole system.

Innet.tutor.com (2017), "Barangay Health Center Information System" improves the consistency of the consultation process of the Barangay Dian-ay health center it increases the performance of medical personnel through its system-generated consultation. It is a web-based system that uses PHP, MySQL, and Bootstrap. The different processes involved in health programs in the system are: immunization, tuberculosis, and family planning; medical services involve medical care, consultation, child care, postpartum, and prenatal; health monitoring involves users, early childhood care and development, morbidity, and animal bite; and profiling involves family profile.

## **Synthesis of the State-Of-The-Art**

The study of (Assad H Thary Al-Ghraiiri, et al.,2021), (Innet.tutor.com (2017), (HF. Capoy, et al., 2019) focused on software requirements in the development of their research including PHP, MySQL, server, HTML, Javascript, CSS, XAMPP, and sublime.

(HF. Capoy, et al., 2019) focuses on improvement for health monitoring and monitors patients' medical history and condition. These also include to the system's features (G. Azuelo, Feb. 2022).

This study enables the researchers to understand the favorable conditions in the Web-based Health Monitoring System for the Municipality of Sta. Cruz Health Center uses Quicksort Algorithm (HF. Capoy, et al., 2019), a web-based system that aids the problem of health workers in terms of record handling and generating reports, the "B-Health - A Framework for Mobile and Web Application for Barangay Health Center in the Municipality of Laguna (M.Garcia, et al., 2021), a mobile and web application for Barangay health centers in rural areas, the Patient Record Management System Project In PHP (G. Azuelo, Feb. 2022), a study that is primarily concerned with the administration of patient reports, the medical health care system (Assad H Thary Al-Ghraiiri, et al.,2021), a website for medical health care system design and development, and Barangay Health Center Information System

Innet.tutor.com (2017), a system that increases the performance of medical personnel through its system generated consultation.

The present study sought to determine the implication of a Web-Based Health Center Management System to increase productivity in a health center. It also explored the practical accessibility to communicating online with the assigned midwife.

### **Gap Bridged in the Study**

The proposed system was derived from a study of local systems that served as the foundation for the development of a health center management system. It explains various available system features, but not all of them are with local and international studies. This proposed system is composed of; patient record, request for consultation, schedule, request for medicine, health monitoring, orientation, events, and account access.

The advocates have examined and researched the relevant systems in order to describe the functionality of the existing system. The majority of studies and research centered on patient record update, consulting, and health monitoring. No one, however, paid attention to account permission to the system, viewing orientation, events, or displaying the availability of medications that the barangay may provide to patients.

## **Definition of Terms**

The terms are defined using concepts from the dictionary or WEB.

*Midwife.* A health professional who cares for mothers and newborns around childbirth, a specialization known as midwifery.

*Data.* Conceptually, the term data is information output by a sensing device or organ that includes both useful and irrelevant or redundant information and must be processed to be meaningful. (Merriam-webster.com, 2017)

*Management.* It's defined as the process of dealing with or controlling things or people. (Merriam-webster.com, 2017)

*Recording.* The term recording means setting down in writing or some other permanent form for later reference. (Merriam-webster.com, 2017)

*Scheduling.* Scheduling means the arrangement or plan (an event) to take place at a particular time. (Merriam-webster.com, 2017)

*Transaction.* Conceptually, the term transaction is an exchange or interaction between people (Merriam-webster.com, 2017).

*Electronic.* The field of electronics is a branch of physics and electrical engineering that deals with the emission, behavior, and effects of electrons using electronic devices.

*Automated system.* Operations are a combination of both software and hardware that is designed and programmed to work automatically without

the need for a human operator to provide inputs and instructions for each operation.

*Database.* Conceptually, the term database is a large collection of data organized especially for rapid search and retrieval by a computer. (Merriam-webster.com, 2017).

*Waterfall.* A linear sequential approach to the software development life cycle (SDLC) that is popular in software engineering and product development (software equality. TechTarget). In this study, the waterfall is used for software development.

*Web-based.* A web information system, or web-based information system, is an information system that uses Internet web technologies to deliver information and services to users or other information systems/applications (Wikipedia). Web-based is work or system relating to the web, uses a web browser to run and manage certain tasks over the internet.

## CHAPTER III

### Technical Background

This chapter is the presentation of the software, and hardware requirements of the proposed system. The development of this project will not be completed without the following requirements.

**Table 3.1** Software Requirements

Software	Specification
Operating System	Windows 10
WAMP	Software Development Stack
PHP(Hypertext Preprocessor)	Scripting Language
HTML	Mark-up Language
CSS	Web Page Design Formatter
Visual Basic Code	Text Editor
Draw.io	Use for functional, swimlane, and use case
MySQL	Database tool
Browser	Google Chrome, Opera, Mozilla
JavaScript	Front-end scripting language
Wifi	Internet provider

Table 3.1 shows the Software Requirements for the development of the System. For the operating system, the proponents used MS Windows 10 since most personal computer nowadays usually operates with the latest version for the application to work. For the Software Development Stack, WAMP makes easy to code PHP and Creating Databases (in MySQL) in Windows platform. PHP (Hypertext Preprocessor) is the best for Scripting Language because it has wide selection of databases. HTML as a markup language for describing web pages, CSS, and formatting the

design or appearance of the web pages because HTML allows offline storage. Visual Basic Code for editing the code because the structure of the Basic programming language is very simple, particularly as to the executable code. Draw.io for making Functional diagrams, Swimlane, and Use case, it is secured and ISO 9001 compliant. The proponents also used MySQL Workbench for making the Entity Relationship diagram, it is licensed under GPL and is free for downloading, JavaScript as a Front-end scripting language, JavaScript is client-side, it reduces the demand on servers overall, and simple applications may not need a server at all. Lastly, Mozilla Firefox and Chrome web browsers.

**Table 3.2** Hardware Requirements

<b>Hardware</b>	<b>Specifications</b>
Memory	Minimum GB of 2
Hard Disk	Minimum of 120GB
Monitor	14" TN with LED Backlight, 1366 x 768 at Hz
Web-Server	500GB of disk for space for cache, 12 CPU cores, 32GB RAM
Mouse	Two primary buttons, a clickable scroll wheel, USB
Keyboard	Wired or wireless
Processor	1.56 GHz

It shows the Hardware Requirements for the development of the System. For memory, Minimum GB of 2 or higher. Hard Disk, Minimum of 120GB for storage capacity. It is helpful to have this disk drive because HDDs have a larger storage base capacity. Web Server helps manage the

download speed for any web-based application and improves performance. The proponents recommend to have 500GB of disk for space for cache, 12 CPU cores, 32GB RAM. Mouse, Two primary buttons, clickable scroll wheel, USB, keyboard-Wired or wireless and Processor 1.56 GHz.



## **CHAPTER IV**

### **METHODOLOGY**

This chapter presents and illustrates the different figures such as functional diagram, Use case model, analysis, and design that will be used to develop the system entitled "Tambangan Health Center Management System".

#### **Requirements Specification**

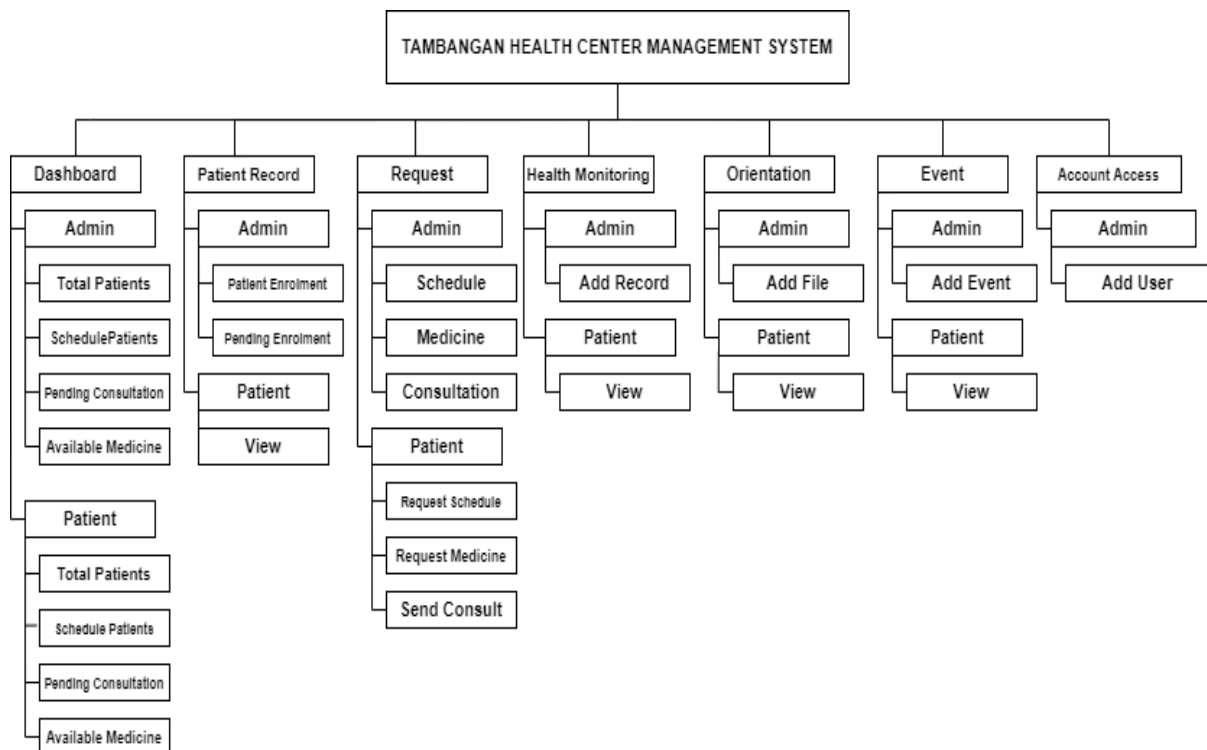
It presents the functional diagram and the use case diagram of the Tambangan Health Center Management System (THCMS). It contains the functionalities and modules of the entire system in managing the data.

#### **Functional Diagram**

The figure below shows the modules for both admin and patient. It contains dashboard, patient record, request, health monitoring, orientation, events, and account access.

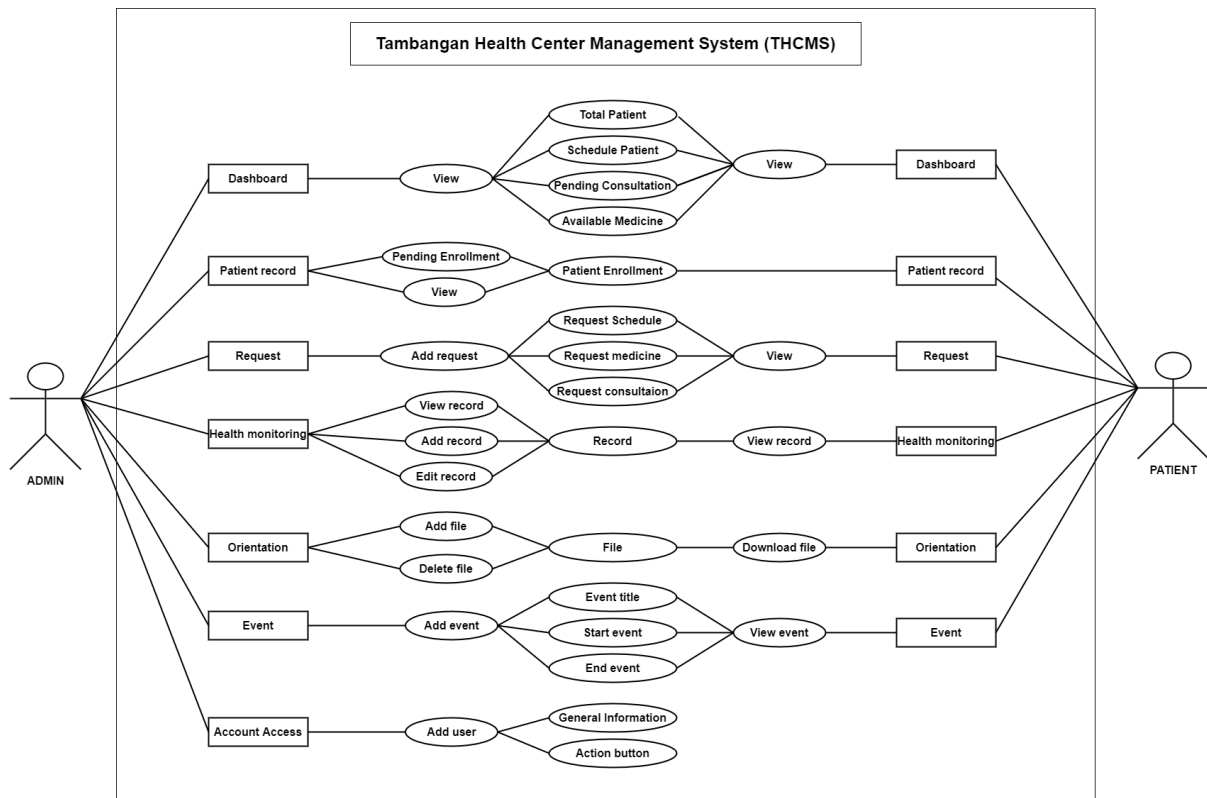
The dashboard for both admin and patients display the total patients, scheduled patients, pending consultation and the available medicine. In patient record, the admin can enroll the patient and can see the pending enrollment, while the patient can just view the patient record.

Under request, the patient can request the midwife's schedule, can request for the available medicine, and can request for consultation. While the admin is the one who can put the available medicine and approve the patient's requests. In health monitoring, the admin will add a record for the patient and each patient can view the patient's own record. In orientation, the admin is the only one who can dit or add file and the patient will just only view it. Under events, the admin will add the upcoming events and the patient can view it. Lastly, in account access, admin is the only one who can add user under the account permission.



**Figure 4.1.** Functional Diagram

## Use Case Diagram



**Figure 4.2** Use Case Model

The THCMS Use Case Diagram is shown in the above figure. In the dashboard, both the patient and the administrator can see the overall number of patients, scheduled patients, pending consultations, and the inventory of medicines. Both the patient and the administrator can see the patient enrollment and record, respectively. The patient can only access the admin-added consultation, availability, and medication schedules under request. The approach for health monitoring is the same as it is for requests. The patient can download a file that the administrator adds to orientation that comprises instructions on good

hygiene, sanitization, and other topics. The patient can watch and get information about forthcoming events listed by admin in events. Last but not least, the admin is the only person with permission to add a user to an account.

### **Analysis Specification**

Barangay Health Center Management System is a system that allows users to examine data and offer services to barangay residents. The use of the system will be examined by the study's proponents to have useful and applicable information for the health management service and assurance of the true identity of the users by giving the necessary personal data.

*Performance.* A framework for enhancing public health via planning, measurement, and ongoing improvement. The measurements enable us to evaluate the performance of our health management system, which is why there are so many people seeking consultation. To keep the situation in good condition by keeping them informed, determining what to do differently, and communicating with the system administrators.

*Information.* When lives and health are on the line, it can be very difficult to put your trust in others. For this reason, it is crucial to research everything that is known before attempting anything. This is the system that was created, and this is what everyone will do to make it function.

In a hospital that strives to make it simpler for everyone who wants to receive treatment without trouble, it will function as a very effective means of communication.

*Economy.* Delivering top-notch healthcare services is the goal of health systems. The work of healthcare professionals using this type of technology also plays a significant part in the status and economic stability. Every barangay has a strong economic base, and the system can help reduce transaction costs for locals and healthcare professionals. It provides an orientation role for managing health. In this segment, all that was required of the participant was using the system and going to the interface with the orientation program; the real orientation was replaced by video orientation by the health personnel. The people didn't have to pay for transportation, and the health professionals didn't need to use any pricey tools like a speaker, monitor, public servant, or other essential equipment for the program to be successful. Therefore, the greater the impact on lower prices that will boost economic growth, the more barangays that use this strategy.

*Control (Security).* Progress without security is a dangerous idea, and the medical sector is especially exposed because healthcare organizations manage so much sensitive patient data. All patients' information, as well as that of any prospective receivers, will be safeguarded. Healthcare workers will be able to compromise between upholding tight regulatory

standards, providing excellent patient care, and preserving patient privacy by employing this method. The rules for healthcare providers that acquire, utilize, or transfer patient information include stringent data protection standards because protected health information is among the most delicate private information about an individual.

*Efficiency.* The Barangay Health Center Management System has error prevention for the user; as a result of the system's upgrade, the system will guarantee that every transaction and procedure by the user may have less errors. Every bug in the system will be quickly removed following the updates, which are a mechanism for addressing errors based on user encounters. With the effectiveness, efficiency, and happiness of the system, certain users can also execute a specified set of duties in a particular context. Despite having enough capabilities to help certain people with their work, this system is simple to use.

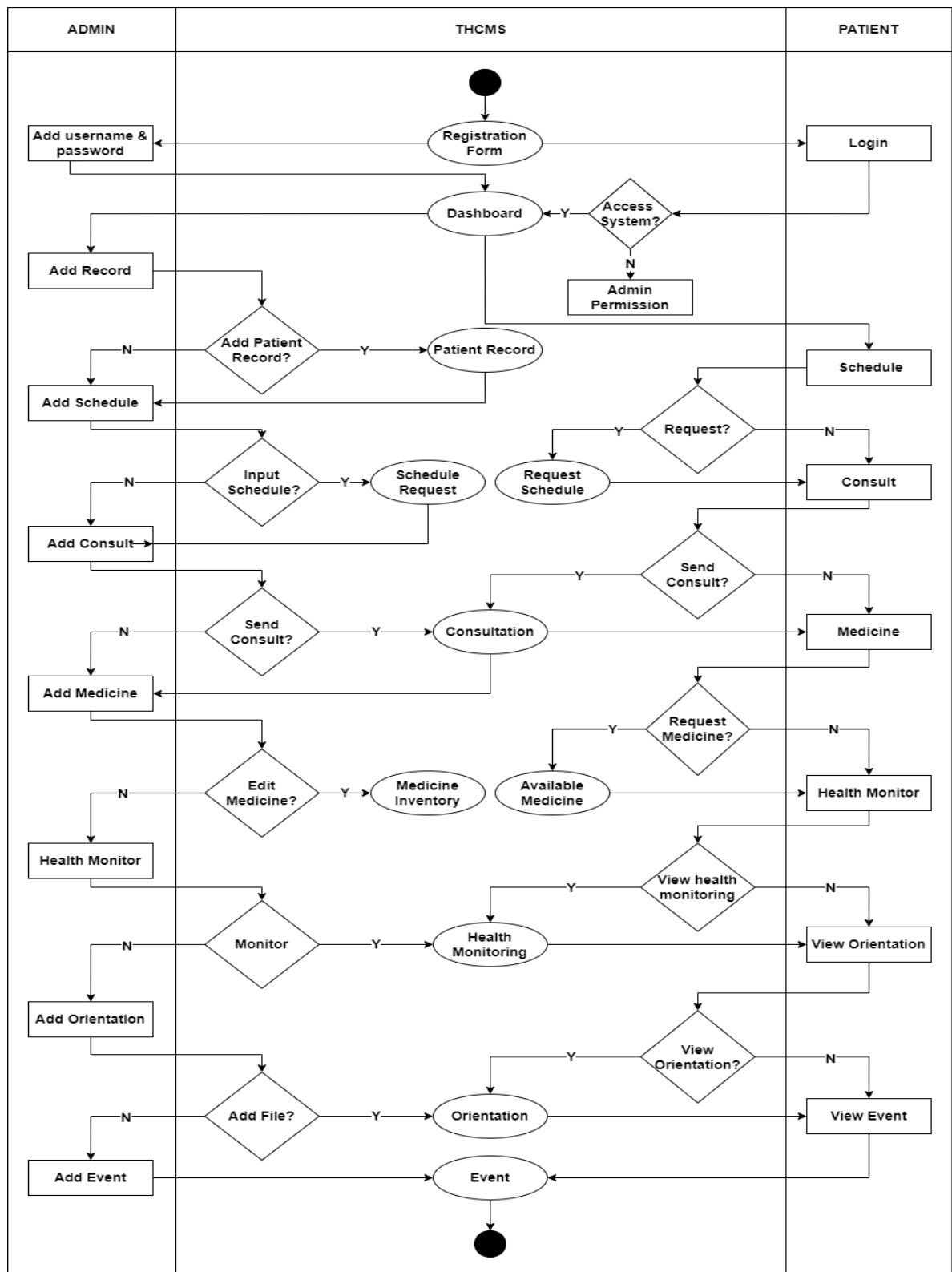
*Service.* Following testing and a system evaluation, the proponents conduct training sessions and give direct instructions on how to use the program. By offering a quick, dependable, and efficient way to shorten the procedure and reduce time spent on it, this system may assist with the research objectives and assign staff and clients. This would result in better service.

## **Design**

The system design is covered in this chapter. The design of system was based entirely on the stakeholder's user needs. A Swimlane, Entity-Relationship Diagram, System prototype, and Data Dictionary were created by the researchers.

### **Swimlane Diagram**

The swimlane diagram below shown features in table with three columns, including THCMS, admin, and patient. A registration form, dashboard, patient record, requests, consultations, medicine inventory, health monitoring, orientation, and events are all included in THCMS. The patient must registered. If there is an account already, it can now proceed to log in. The patient can only access depends the permission of admin. Then, the patient must view the scheduled date for consultation. View and request medicine, viewing orientation and events; the administrator is required to register, if the admin has already an account, it will automatically proceed to log in. Under the dashboard, there is patient record. The admin must check the schedule, must manage the consultation, check and view medicine inventory, the admin must manage to monitor the health of patient, manage to upload file in orientation and manage to add and set date for events.



**Figure 4.3** Swimlane diagram



## Entity Relationship Diagram

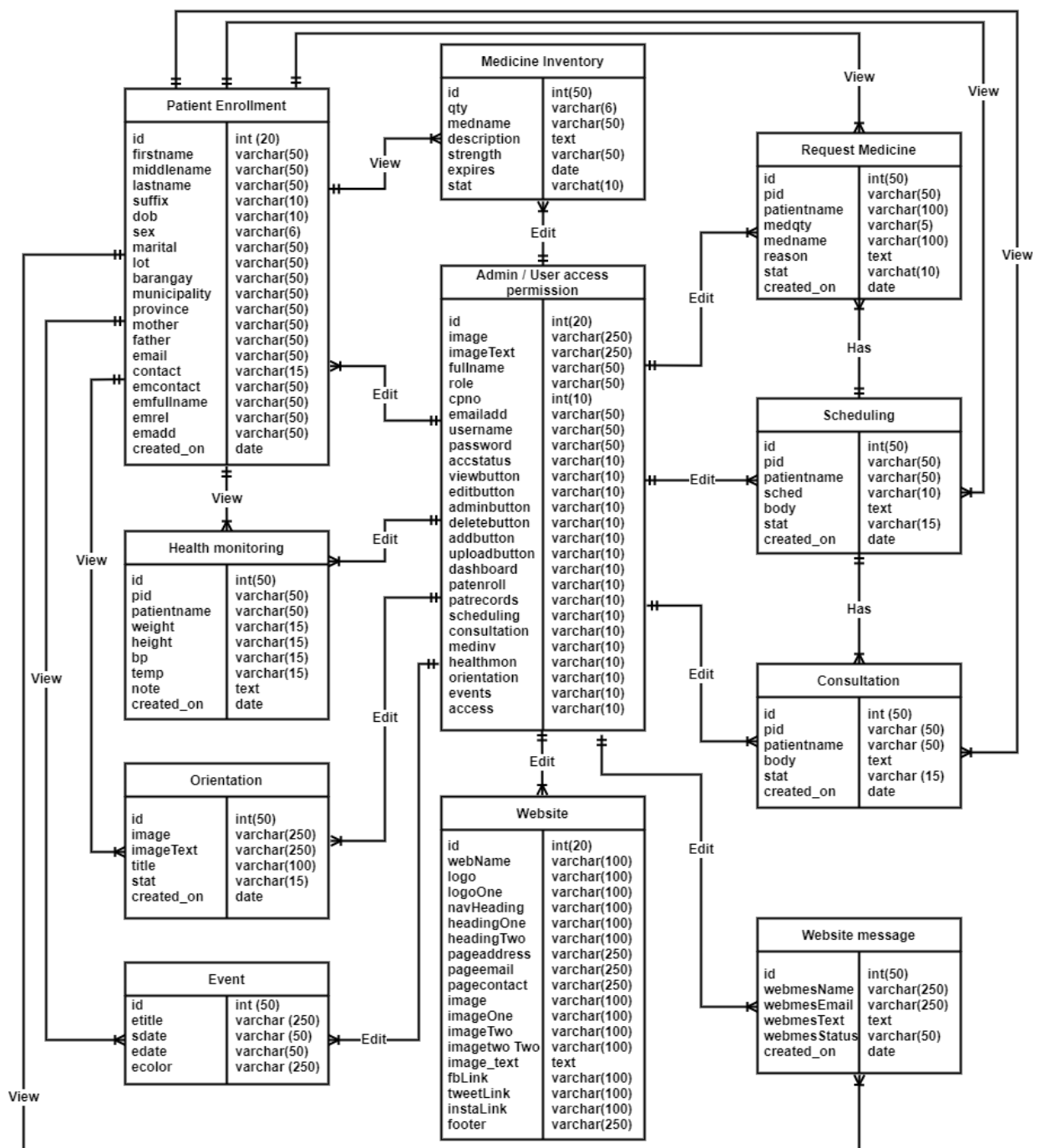


Figure 4.4 Entity Relationship Diagram

The Entity-Relationship Diagram for the Tambangan Health Center Management System is depicted in the above figure. This diagram typically displays the data for the system's entities as well as the connections between those objects. The admin has the ability to edit, add, and remove patient data. The administrator has access to public websites, events, consultations, scheduling, medicine inventories, and patient messages within those websites. The only person with authorization to manage user access permissions is the administrator, who can add more users to the system who will have access to all features and services. The patient's personal information can be added to the registration form. All system features and functions, including health monitoring, consultation, scheduling, and medicine inventory, are exclusively visible to the patient. The patient can only view all of the system's features and capabilities, including health monitoring, consultations, scheduling, medicine inventories, events, orientations, and public websites. The patient can also use the public website's contact form to send a message.

## Data Dictionary

This section shows the data dictionary of the proposed system that contains a list of all files in the database with different attributes with its data type, size, and description. The proponents show the data dictionary for user access permission, patient enrolment, events, medicine inventory, health monitoring, consultation, orientation, website, and website message.

**Table 4.1** Data Dictionary for Access Permission

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	20	Not null	Unique identifier for access permission.
	image	varchar	250	Not null	This holds the image of user.
	image Text	varchar	250	Not null	This holds the text of the image of the user account.
	fullname	varchar	50	Not null	This holds the complete name of the user in access permission.
	role	varchar	50	Not null	This holds the account role of the user in access permission.
	cpno	int	15	Not null	This holds the cellphone number of the user in access permission.
	email add	varchar	50	Not null	This holds the email address of the in user access permission.
	username	varchar	50	Not null	This holds the user name of the user in access permission.
	password	varchar	50	Not null	This holds the password of the user in access permission.
	accstatus	varchar	10	Not null	This holds the account status of user in user access permission.
	viewbutton	varchar	10	Not null	This holds the view button in access permission.
	editbutton	varchar	10	Not null	This holds the edit button in access permission.
	admin	varchar	10	Not	This holds the admin button in

	button			null	access permission.
	delete button	varchar	10	Not null	This holds the delete button in access permission.
	addbutton	varchar	10	Not null	This holds the add button in access permission.
	upload button	varchar	10	Not null	This holds the upload button in access permission.
	dashboard	varchar	10	Not null	This holds the dashboard button in access permission.
	patient roll	varchar	10	Not null	This holds the patient enrolment in access permission
	patient records	varchar	10	Not null	This holds the patient records in access permission.
	scheduling	varchar	10	Not null	This holds the scheduling in access permission.
	consultation	varchar	10	Not null	This holds the consultation in access permission.
	medicine	varchar	10	Not null	This holds the medicine inventory in access permission.
	health monitoring	varchar	10	Not null	This holds the health monitoring in access permission.
	orientation	varchar	10	Not null	This holds the orientation in access permission.
	events	varchar	10	Not null	This holds the events in access permission.
	access	varchar	10	Not null	This holds the account access in access permission.

**Table 4.2** Data Dictionary for Patient Enrollment

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	20	Not null	Unique identifier for patient enrolment.
	firstname	varchar	50	Not null	This holds the first name of patient.
	Middle name	varchar	50	Not null	This holds the middle name of patient.
	lastname	varchar	50	Not null	This holds the last name of patient.
	suffix	varchar	10	Not null	This holds the suffix of a patient.
	dob	varchar	10	Not null	This holds the date of birth of the patient.
	sex	varchar	6	Not null	This holds the sex of the patient.
	marital	varchar	50	Not null	This holds the marital status of patient.
	lot	varchar	50	Not null	This holds the lot of patient.
	barangay	varchar	50	Not null	This holds the barangay of patient.
	municipality	varchar	50	Not null	This holds the municipality of patient.
	province	varchar	50	Not null	This holds the province of patient.
	mother	varchar	50	Not null	This holds the mother's complete name of patient.
	father	varchar	50	Not null	This holds the father's complete name of patient.
	email	varchar	50	Not null	This holds the email address of patient.
	contact	int	15	Not null	This holds the contact number of patient.
	emcontact	int	50	Not null	This hold the contact number of contact person of a patient.
	emfull name	varchar	50	Not null	This holds the complete name of contact person of a patient.
	emrel	varchar	50	Not null	This holds the relationship of a patient to contact person.
	emadd	varchar	50	Not	This holds the complete

				null	address of contact person.
	create d_on	date		Not null	This holds the date when the data created.

**Table 4.3** Data Dictionary for Admin

<b>Const raint</b>	<b>Attri butes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	20	Not null	Unique identifier for admin.
	image	varchar	250	Not null	This holds the image in admin.
	image Text	varchar	250	Not null	This holds the text of the image in the system account.
	fullna me	varchar	50	Not null	This holds the complete name of admin.
	role	varchar	50	Not null	This holds the account role of admin.
	cpno	int	15	Not null	This holds the cellphone number of admin.
	emaila dd	varchar	50	Not null	This holds the email address of admin.
	userna me	varchar	50	Not null	This holds the user name of admin.
	passw ord	varchar	50	Not null	This holds the password of admin.

**Table 4.4** Data Dictionary for Events

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	50	Not null	Unique identifier for event.
	etitle	varchar	250	Not null	This holds the title of event.
	sdate	varchar	50	Not null	This holds the start date of event.
	edate	varchar	50	Not null	This holds the end date of event.
	ecolor	varchar	250	Not null	This holds the background color of event.

**Table 4.5** Data Dictionary for Medicine Inventory

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	50	Not null	Unique identifier for medicine inventory.
	qty	varchar	6	Not null	This holds the quantity of medicine.
	medname	varchar	50	Not null	This holds the name of medicine.
	description	text		Not null	This holds the description of medicine.
	strength	varchar	50	Not null	This holds the strength of medicine.
	expires	date	10	Not null	This holds the expiration date of medicine.
	stat	varchar	10	Not null	This holds the status of medicine.

**Table 4.6** Data Dictionary for Health monitoring

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	50	Not null	Unique identifier for health monitoring.
	pid	varchar	50	Not null	This holds the patient id.
	patient name	varchar	30	Not null	This holds the patient name.
	weight	varchar	15	Not null	This holds the patient weight.
	height	varchar	15	Not null	This holds the patient height.
	bp	varchar	15	Not null	This holds the patient blood pressure.
	temp	char	15	Not null	This holds the patient temperature.
	note	text		Not null	This holds the notes for patient.
	created_on	date		Not null	This holds the date when the data was created.

**Table 4.7** Data Dictionary for Consultation

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	50	Not null	Unique identifier for consultation.
	pid	varchar	50	Not null	This holds the patient id.
	patient name	varchar	50	Not null	This holds the patient name.
	body	text		Not null	This holds the consultation from admin.
	stat	varchar	15	Not null	This holds the status of consultation.
	created_on	date		Not null	This holds the date when the data was created.



**Table 4.8** Data Dictionary for Orientation

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	50	Not null	Unique identifier for orientation.
	image	varchar	250	Not null	This holds the image of orientation.
	image Text	varchar	250	Not null	This holds the text of image for orientation.
	title	varchar	100	Not null	This holds the title of orientation.
	stat	varchar	15	Not null	This holds the status of orientation.
	create d_on	date		Not null	This holds the date when data was created.

**Table 4.9** Data Dictionary for Scheduling

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	50	Not null	Unique identifier for scheduling
	pid	varchar	50	Not null	This holds the unique identifier of patient in scheduling
	patient name	varchar	50	Not null	This holds the patient name.
	Sched	varchar	10	Not null	This holds the schedule of a patient
	body	text	50	Not null	This holds the description in schedule.
	stat	varchar	15	Not null	This holds the status of schedule.
	create d_on	date		Not null	This holds the date when data was created.

**Table 4.10** Data Dictionary for Website

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	20	Not null	Unique identifier for Website
	webName	varchar	100	Not null	This holds the name of public website.
	logo	varchar	100	Not null	This holds the logo image in public website.
	navHeading	varchar	100	Not null	This holds the navigation heading in public website.
	headingOne	varchar	100	Not null	This holds the title heading in public website.
	HeadingTwo	varchar	100	Not null	This holds the sub heading in public website.
	pageaddress	varchar	250	Not null	This holds the contact address of user in public website.
	pageemail	varchar	250	Not null	This holds the page email of user in public website.
	pagecontact	varchar	250	Not null	This holds the contact of user in public website.
	image	varchar	100	Not null	This holds the background of home in navigation bar in public website.
	imageTwo	varchar	100	Not null	This holds the background of about us in public website
	fbLink	varchar	100	Not null	This holds the facebook link in public website.
	tweetLink	varchar	100	Not null	This holds the twitter link in public website.
	instaLink	varchar	100	Not null	This holds the instagram link in public website.
	footer	varchar	250	Not null	This holds the footer in public website.

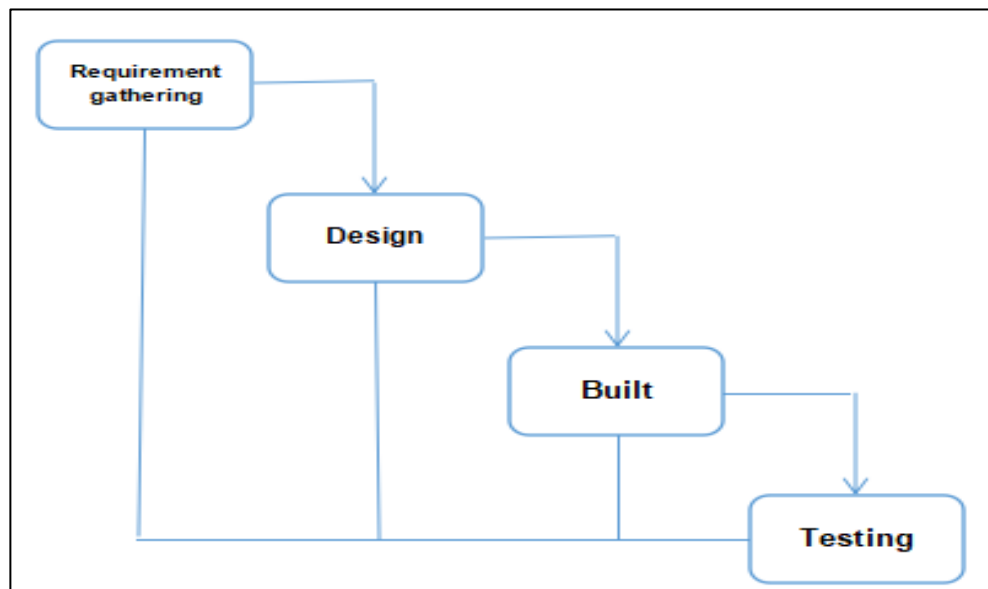
**Table 4.11** Data Dictionary for Website message

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	50	Not null	Unique identifier for website message.
	webmesName	varchar	250	Not null	This holds the user's name.
	webmesEmail	varchar	250	Not null	This holds the user's email.
	webmesText	text	text	Not null	This holds the user's message.
	webmesStatus	varchar	50	Not null	This holds the message status.
	Created_on	date		Not null	This holds the date when message was created or submitted to the system.

**Table 4.12** Data Dictionary for Request medicine

<b>Constraint</b>	<b>Attributes</b>	<b>Data type</b>	<b>Size</b>	<b>Null</b>	<b>Description</b>
PK	id	int	50	Not null	Unique identifier for request medicine.
	pid	varchar	50	Not null	This holds the patient id.
	patient name	varchar	100	Not null	This holds the patient name.
	medqty	varchar	5	Not null	This holds the quantity of medicine.
	medname	varchar	100	Not null	This holds the name of medicine.
	reason	text		Not null	This holds the reason of patient.
	stat	varchar	10	Not null	This holds the status of medicine.
	created_on	date			This holds the date when request was created.

## Development and Testing



**Figure 4.5** Waterfall model

*Gathering requirements.* The initial phase depicts the researchers speaking with Brgy. Captain Bernie Agravante and Mrs. Isabel Agravante, one of the BHW, are there when the supporters begin to compile the system's criteria and pertinent data.

*Design.* The system's design is demonstrated in phase two utilizing PHP as the programming language and WAMPP as the database server. Ignoring the data gathered as a foundation for creating the suggested system's design.

*Built.* Coding and system development would be the focus of this third phase. The second phase's design serves as the foundation for creating the system's software.

*Testing.* The fourth step demonstrates that testing would be required to confirm that the software is developed in accordance with requirements relevant to its usage and provided by the proponent's intended designs.

## **Statistical Tools**

The researchers used the weighted mean to simplify the data gathered from the respondents. And using a 5 points scale in each testing phase of the system based on the Likert Scale.

The formula was:

$$Mw = \frac{\sum px}{\sum f}$$

Where:

Mw = the weighted mean.

$\sum px$  = is the summation of the procedure of the weight and the frequency.

P = is the frequency.

x = is the weight

$\sum f$  = is the total number of respondents.

**Table 4.13** Range Scale of Verbal Interpretation

<b>Points</b>	<b>Description</b>
0.01-1.00	Strongly Disagree
1.01-2.00	Disagree
2.01-3.00	Slightly agree
3.01-4.00	Agree
4.01-5.00	Strongly Agree

Table 4.13 shows the range scale of verbal interpretation that was used as the summary of computed weighted mean to give a proper flow of discussion to the system. These include the range with its verbal interpretation. The range for 0.01-1.00 is interpreted as strongly disagree. 1.01-2.00 interpreted as disagree. 2.01-3.00 interpreted as slightly agree. 3.01-4.00 interpreted as agreeing and 4.01-5.00 interpreted as strongly agree.

## **Chapter V**

### **ANALYSIS AND INTERPRETATION**

#### **Functionalities and Features of the Proposed System**

The Tambangan Health Center Management System includes a variety of capabilities, including Patient Records, Request, Health Monitoring, Orientation, Events, Dashboard, and Account Access, which correspond to the study objectives. The functions for the Administrator in account administration are add, edit, remove, and update. Prior to using the system, the patient must register. Only the Dashboard, Patient Record, Request, Health Monitoring Orientation, and Events are visible to the patient. The patient can view updates that have been posted by the administrator.

#### **System Requirements of the Proposed System**

The system development needs are discussed by the researchers. There are several software requirements, including an operating system (Windows 10), a database server (WAMP), the markup language HTML, a web page design formatter (CSS and JavaScript), a text editor (Visual Studio Code), a diagram editor (Microsoft and Draw.io), a browser (Google Chrome and Microsoft Edge), and an internet service provider

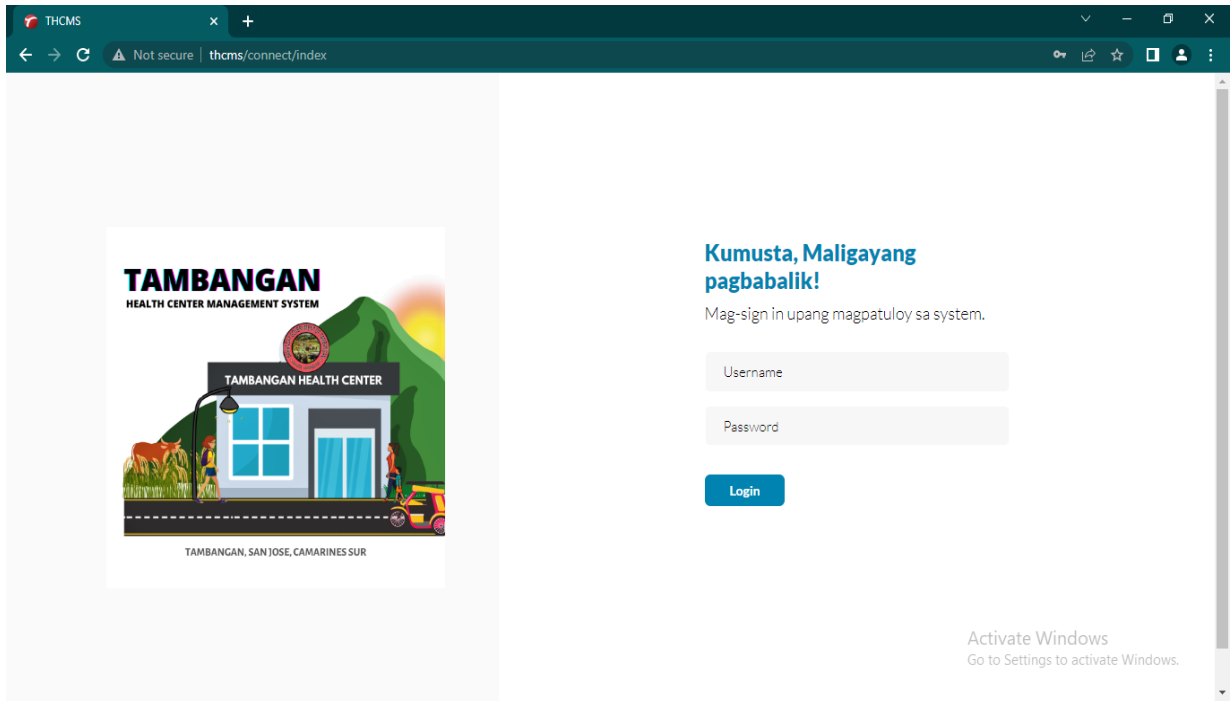
(Converge ICT). Hardware requirements for the system's development. Processor: AMD Quad Core E2- 6110, 1.56GHz. Web server with 12 CPU cores, 32GB RAM, and 500GB of cache capacity on disk. Memory must have 2GB of RAM or more, and hard drives must have 240GB of storage space or more. For mobile phones, it's an android or iOS device, and for PCs, it's a laptop or desktop. For the keyboard and mouse, there are two main buttons, a clickable scroll wheel, and USB, whether it is wired or wireless.

## **System Interface**

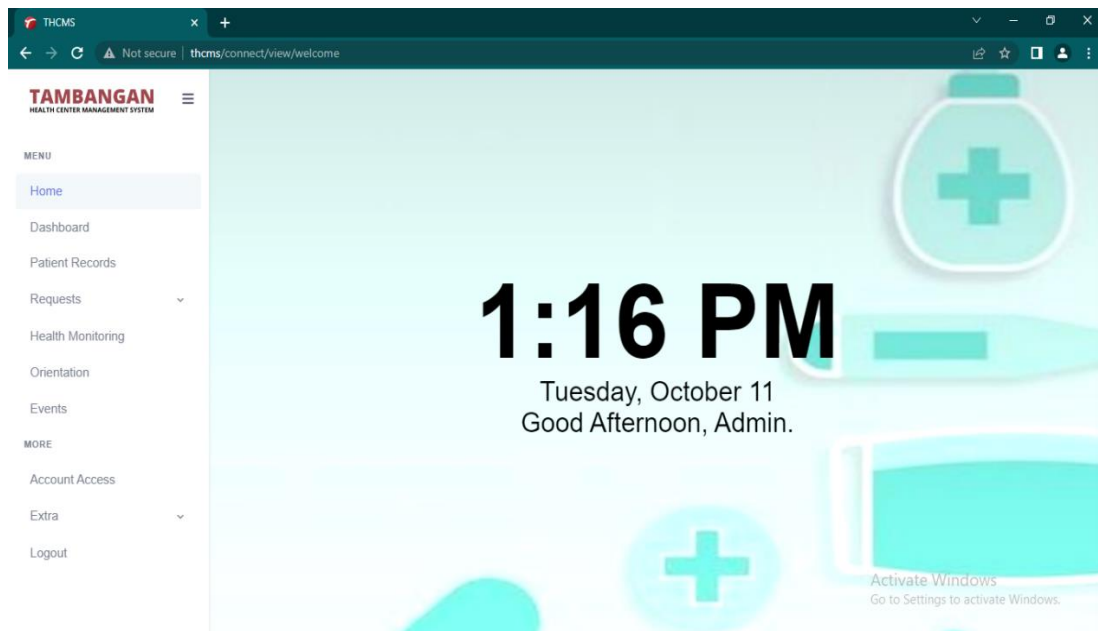
It displays the suggested system's system design as well as the system transaction process. The system interface may make it easier for administrators and patients to comprehend how the system works.

The Tambangan Health Center Management System's admin interface is depicted in the figures below such as log-in, home, dashboard, and patient enrolment. While in patient's interface includes home, dashboard, patient record, and health monitoring.

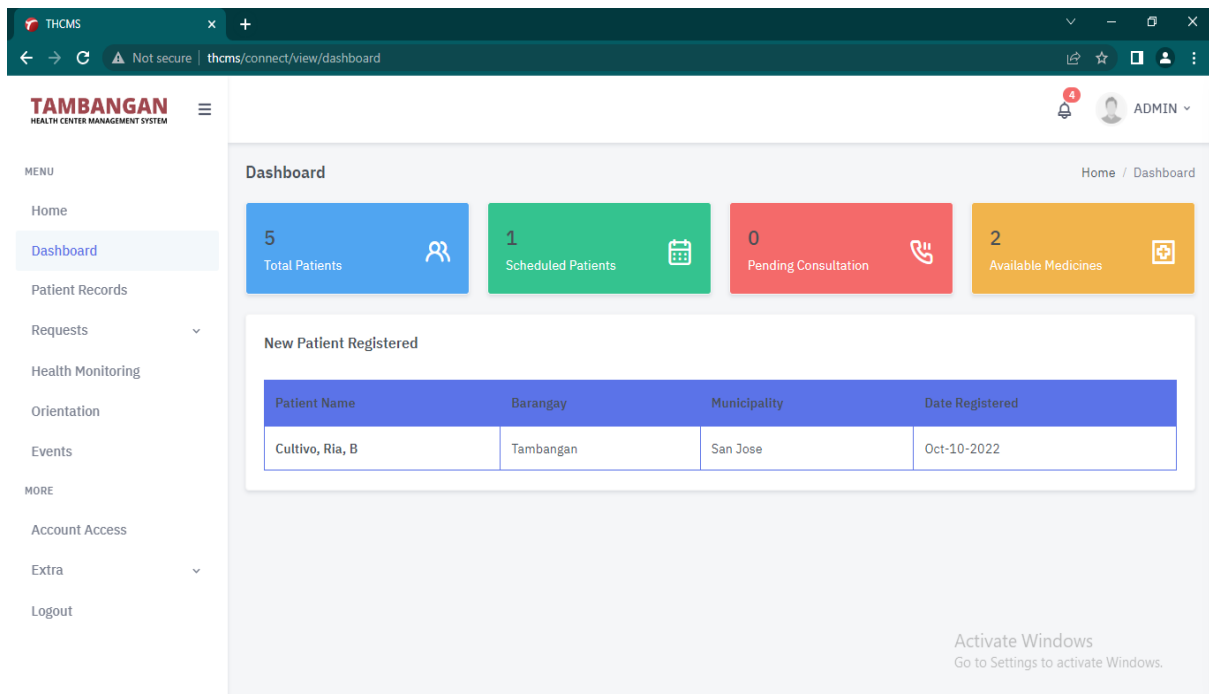




**Figure 5.1** Log-in interface for Admin



**Figure 5.2** Interface of Home for Admin



**Figure 5.3** Dashboard for Admin

**TAMBANGAN**  
HEALTH CENTER MANAGEMENT SYSTEM

MENU

- Home
- Dashboard
- Patient Records
- Requests
- Health Monitoring
- Orientation
- Events

MORE

- Account Access
- Extra
- Logout

Patient Enrollment

General Information

First Name \*  
Last Name \*

Middle Name \*  
Suffix Name (Jr, Sr, I, II, III)

Email Address  
Contact Number \*

Gender \*  
Date of Birth \*  
Marital Status \*

Zone/Lot No/House No  
Barangay \*

Municipality \*  
Province \*

Close Enroll

Search:

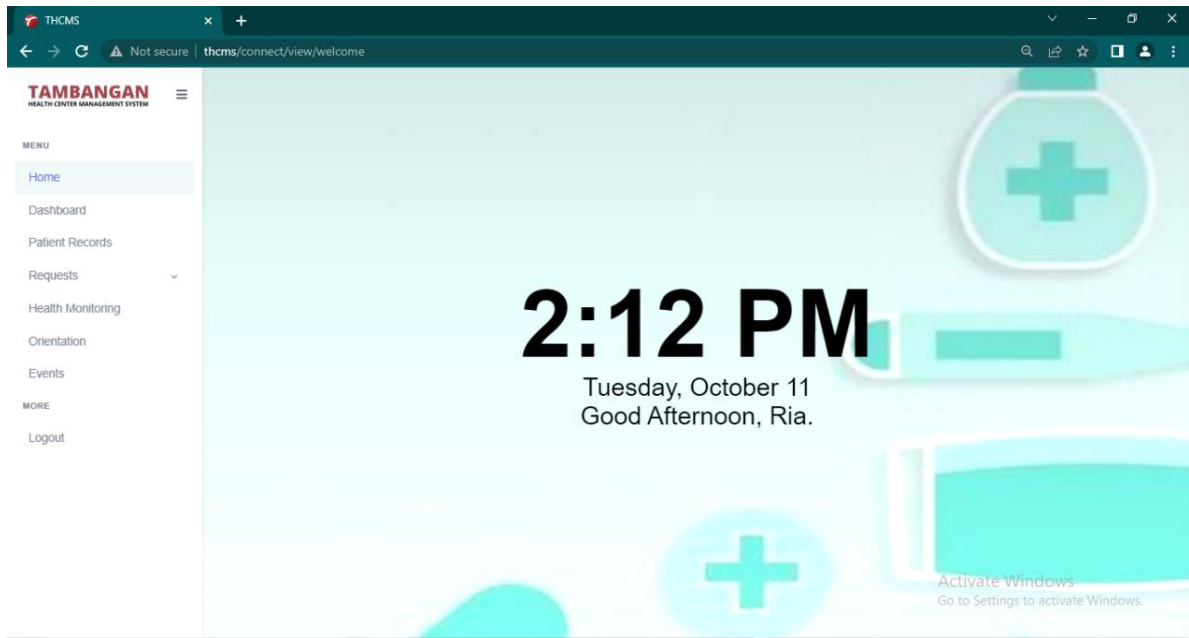
name ↑↓ Registered ↑↓

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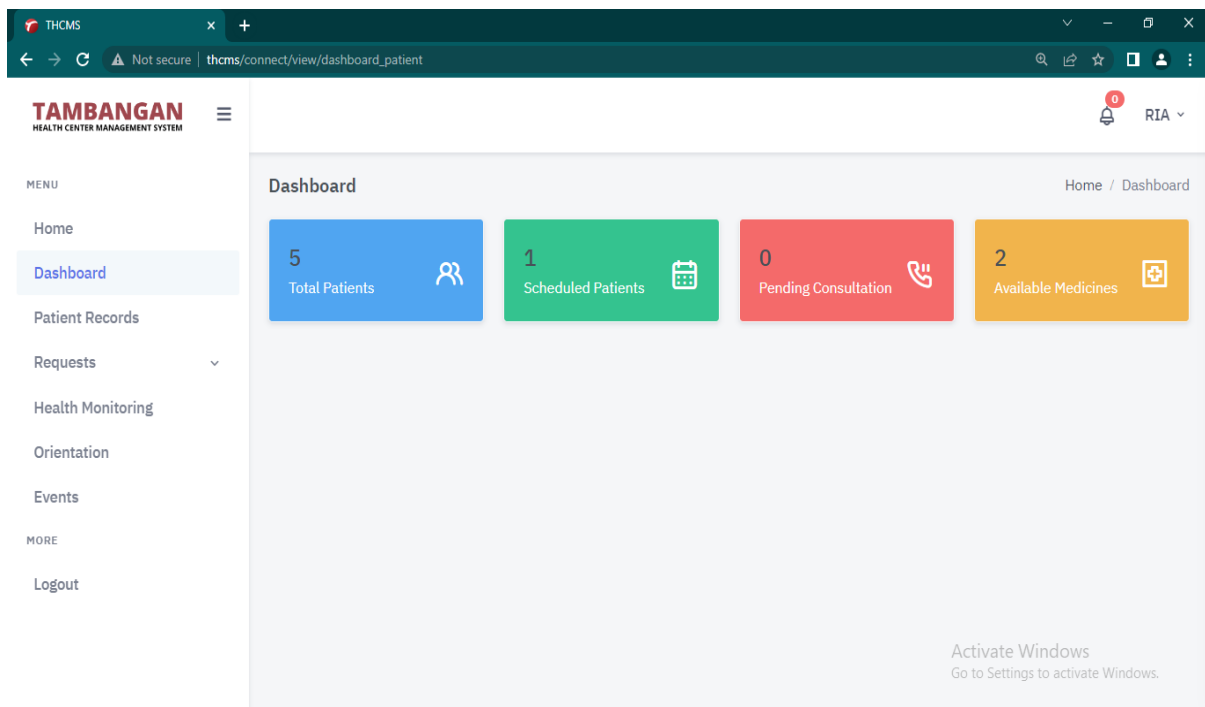
Previous 1 Next

Activate Windows  
Go to Settings to activate Windows.

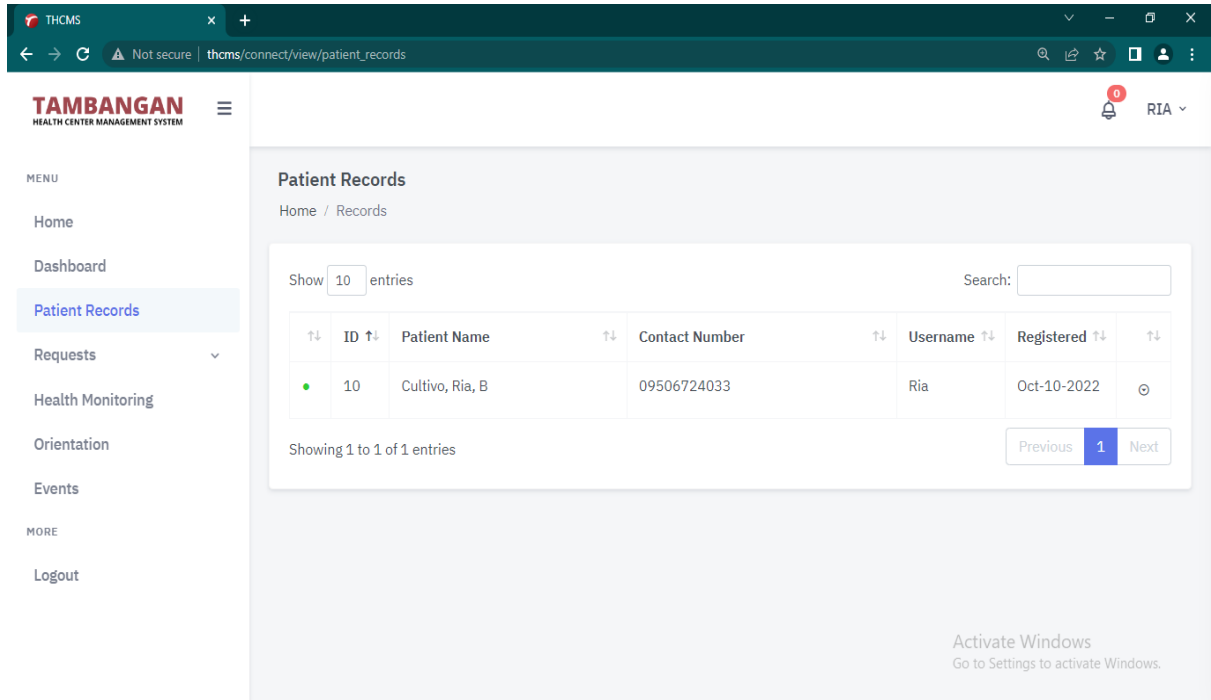
**Figure 5.4** Patient Enrollment for Admin



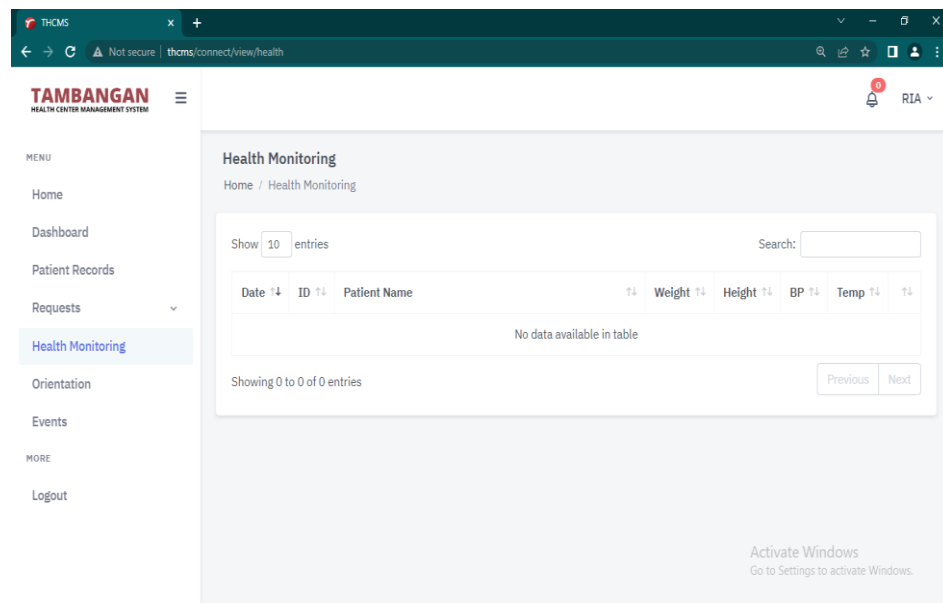
**Figure 5.5** Home interface for Patient



**Figure 5.6** Dashboard Interface for Patient



**Figure 5.7** Patient Records interface for Patient



**Figure 5.8** Health Monitoring interface for Patient

## System Evaluation

The researchers did a dry run in barangay Tambangan with 60 respondents, including staff from the health center, barangay officials, and some residents in the said barangay.

This chapter evaluated the functionality's usability, efficiency, and reliability. The statistics from the respondents' comments, which verified the functionality of the system, are shown in the following table. To determine whether or whether survey respondents generally agreed or disagreed with a specific proposition, the proponents utilized weighted mean.

**Table 5.1** Evaluation Results for Usability

A. Usability							
The user comprehends how to use the system easily.	43	17				4.7	<b>SA</b>
The user learns the system easily.	36	24				4.6	<b>SA</b>
The user used the system without much effort.	30	24	6			4.4	<b>SA</b>
The interface looks good.	49	11				4.8	<b>SA</b>
<b>Total Weighted Average</b>						<b>4.6</b>	<b>SA</b>

Table 5.1 shows the result of the system's usability evaluated by 60 respondents with a weighted average of 4.6 and the verbal interpretation of "strongly agree" this means that the assigned midwife and residents of barangay Tambangan find the system usable.

**Table 5.2** Evaluation Results for Efficiency

B. Efficiency							
The system responds quickly.	43	17				4.7	<b>SA</b>
The system utilizes resources efficiently.	32	28				4.5	<b>SA</b>
<b>Total Weighted Average</b>						<b>4.6</b>	<b>SA</b>

Table 5.2 shows the result of the system's efficiency evaluated by 60 respondents with a weighted average of 4.6 and the verbal interpretation of "strongly agree". This means that the system is capable of producing desired results.

**Table 5.3** Evaluation Results for Reliability

C. Reliability							
The majority of the software's flaws been fixed on time.	40	19	4			4.8	<b>SA</b>
The system is capable of handling erros.	27	29	4			4.3	<b>SA</b>
The software resumes working and restore lost data after failure.	36	21	3			4.5	<b>SA</b>
<b>Total Weighted Average</b>						<b>4.5</b>	<b>SA</b>

Table 5.3 shows the result of the system's reliability evaluated by 60 respondents with a weighted average of 4.5 and the verbal interpretation of "strongly agree" this means that the assigned midwife and the residents of barangay Tambangan find the system reliable.

**Table 5.4** Evaluation Results for Summary for Usability, Efficiency and Reliability.

<b>Evaluation Criteria</b>	<b>Sub. Weighted Mean</b>	<b>Verbal Interpretation</b>
Usability	4.6	Strongly Agree
Efficiency	4.6	Strongly Agree
Reliability	4.5	Strongly Agree
<b>Grand Weighted Mean</b>	<b>4.5</b>	<b>Strongly Agree</b>

Table 5.4 shows the tabulated results of conducted testing in Barangay Tambangan, San Jose, Camarines Sur. This was through survey questionnaires. The system's overall performance for users have a grand weighted mean of 4.5 and verbal interpretation of "strongly agree" this means that the respondents from Barangay Tambangan strongly agreed in terms of Usability, Efficiency and Reliability. This implies that the developed system entitled "Tambangan Health Center Management System" has a good system performance and the functionalities of the system are properly working. The system was beneficial to the barangay Tambangan.

## **Chapter VI**

### **CONCLUSION AND RECOMMENDATION**

The Tambangan Health Center Management System's conclusion and recommendations are presented in this chapter (THCMS). The system's primary target users are the employees of the Health Center and the people living in the barangay. The system concentrated on processing the patient and midwife data. Additionally, it displays the Health Center transaction.

#### **Conclusion**

The proponents conducted a survey to test the performance of the functionality of the system. Based on the result of the conducted testing to the 60 people in barangay Tambangan, the grand weighted mean rating for the system's performance was 4.5 with the verbal interpretation of "strongly agree". During the survey, the proponents received positive appreciation and good feedback about the design from the respondents. This means that the researchers developed a highly usable and efficient system.



## **Recommendation**

The researchers integrated system security through account creation to ensure the system's success. The researchers advised creating separate accounts for patients and the administrator. To verify the authenticity of each account, a username and password are needed. These accounts have privileges that are exclusively available to specific system operations. It is possible for an Administrator with complete access to the system to modify, add, create, delete, and update user accounts and system resources. The Barangay Health Workers (BHW) should be able to access the account using the Administrator's User Permission, according to the study. The patient can only view the system, request the available medicine, and request a schedule when the admin activates the button under the Account Access section. The patient's only options are to check the system, request the available medications, request the midwife's schedule, and request a consultation. THCMS is available for an upgrade to maintain the system's effectiveness and it is recommended to use by the LGU.

## **Chapter VII**

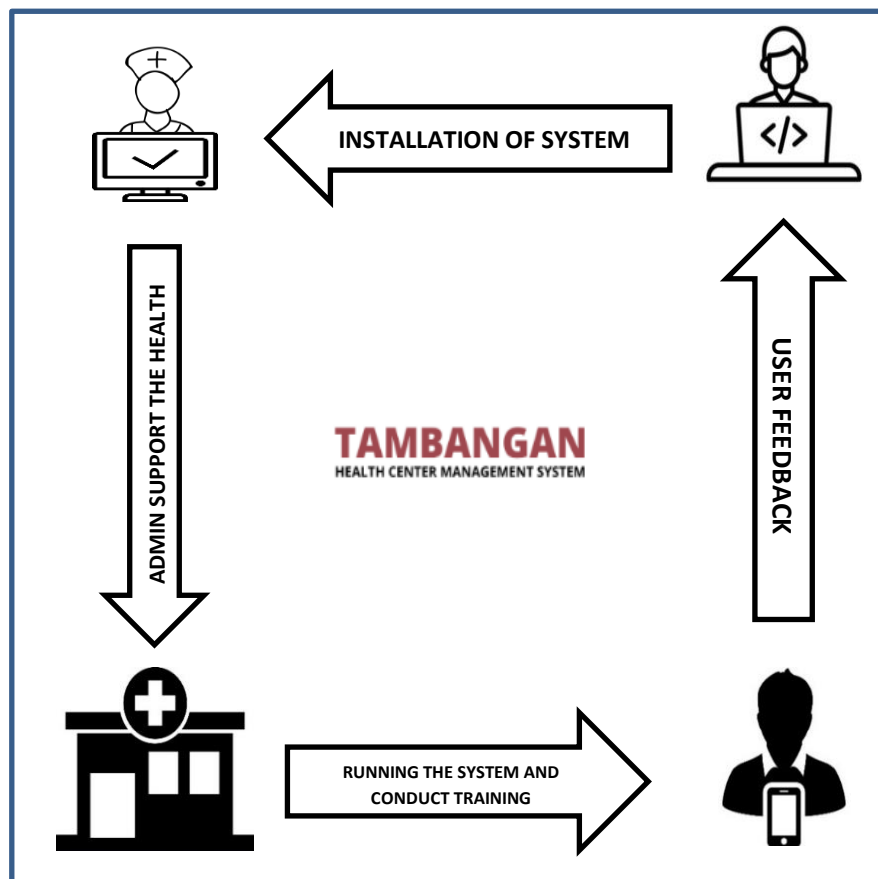
### **IMPLEMENTATION PLAN**

The system will be placed into action once it has been examined and approved by the stakeholders as the project's final deliverable. The administrators and patients are the intended users of the Tambangan Health Center Management System (THCMS). The system will be installed in Tambangan Health Center in relation to this. THCMS requires hardware and software specs for system implementation.

The recommended hardware requirements for the Tambangan Health Center Management System include a CPU that runs at least at 1.56 GHz, computer memory that is at least 4GB, a hard disk that is at least 120GB, and input devices such a mouse and keyboard. In addition, the system needs certain software components to function, such as MySQL for database administration and Apache Web Server to handle the system's processing needs. A specific product, such as WAMPP, can be installed in order to implement or set up these two components. All the programs required to create and deploy web-based applications, like the created system, are included in the WAMPP package.

## Manpower Requirements

The system's supporters will train the administrator or the midwife to control and manage it once it has been finished. After the demo, the system will be installed on a desktop computer, and the developers will check to see if it works properly after that. If there is no error, the system will switch to the Barangay Tambangan Health Center. In the event that training is required, the developers are happy to provide it.



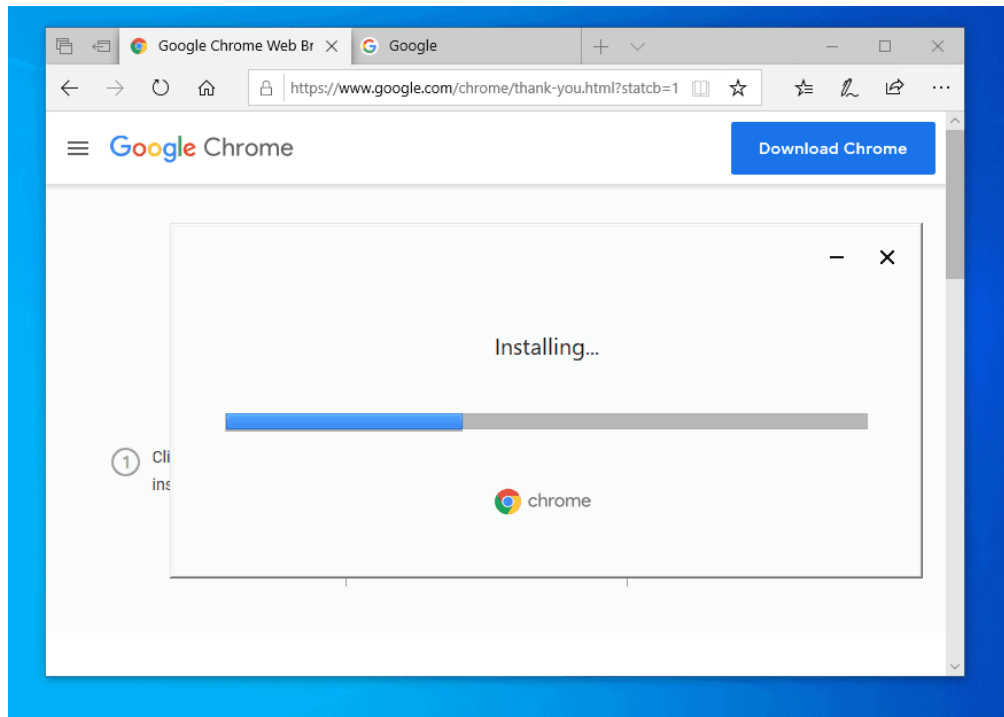
**Figure 7.1** Tambangan Health Center Management System  
Implementation Structure

Figure 7.1 depicted the Tambangan Health Center Management System's implementation structure (THCMS). The developer will initially setup the system for the administrator. The administration also supports the Health Center. Third, activate the system and provide patients or residents training on how to use it. Users are strongly encouraged to provide comments after the system has been tried, as this will assist researchers determine how to enhance the system. Last but not least, system operation comprises user support to the end user or users who are a crucial component of the operation's election process. As long as the system can be successfully modified to meet an organization's demands, operations continue.

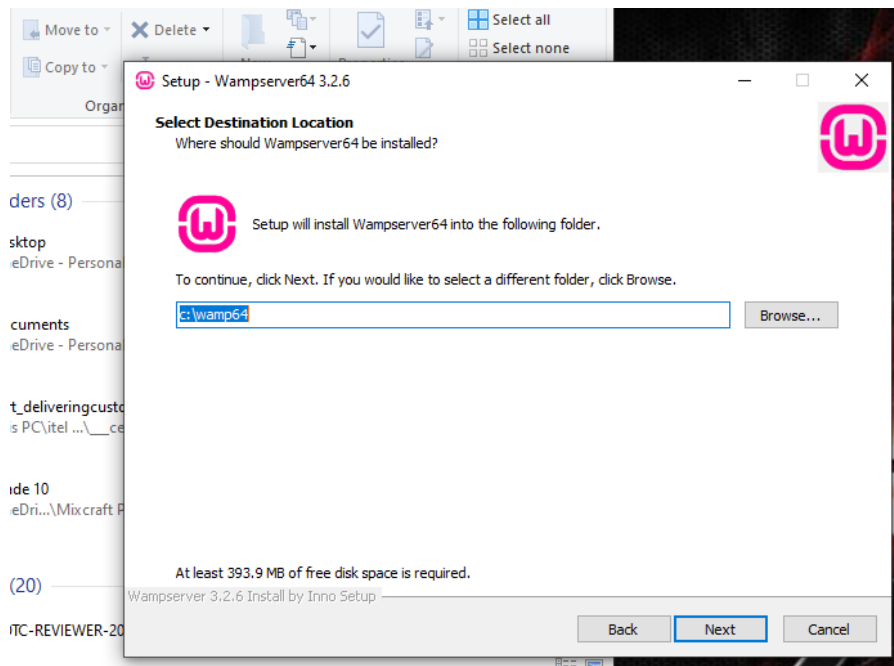
### **Implementation Methodology**

This section present the algorithm to install the Tambangan Health Center Management System (THCMS) in health center of Barangay Tambangan, San Jose, Camarines Sur.

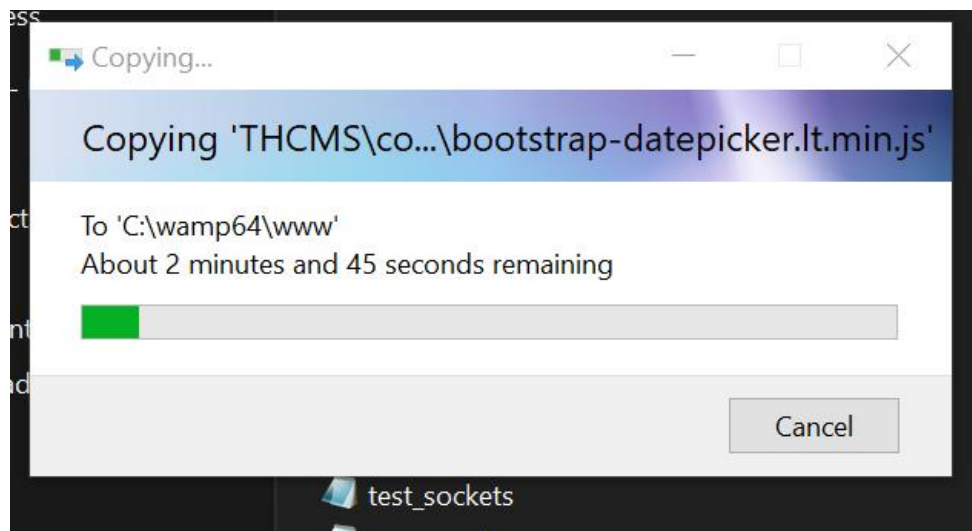
## 1. Install Web browser on the computer



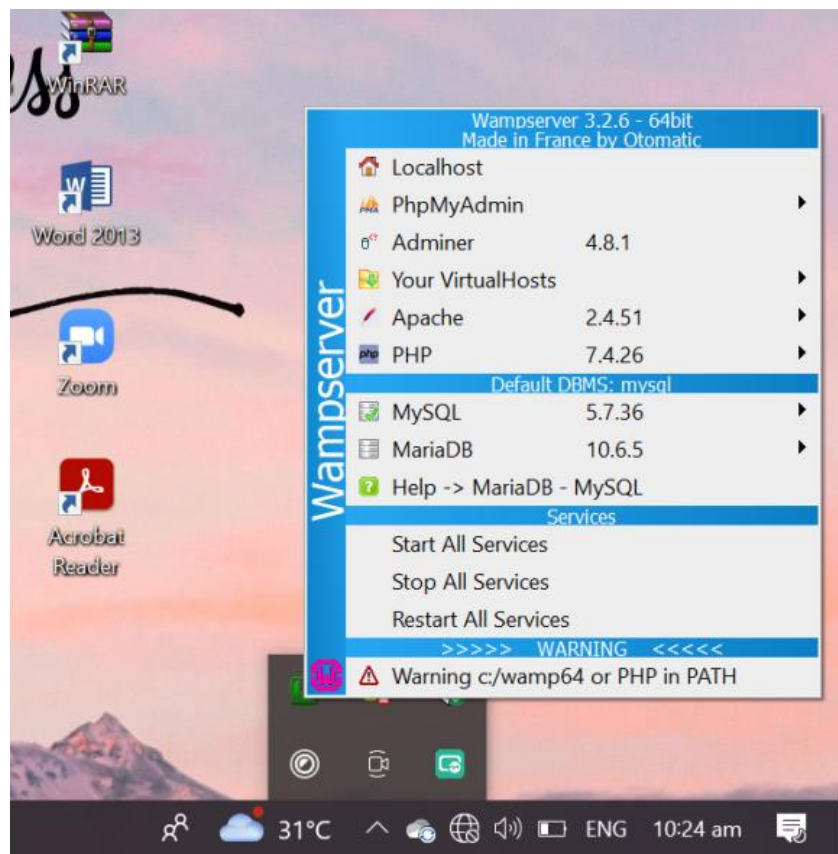
## 2. Install the WAMP server on the computer.



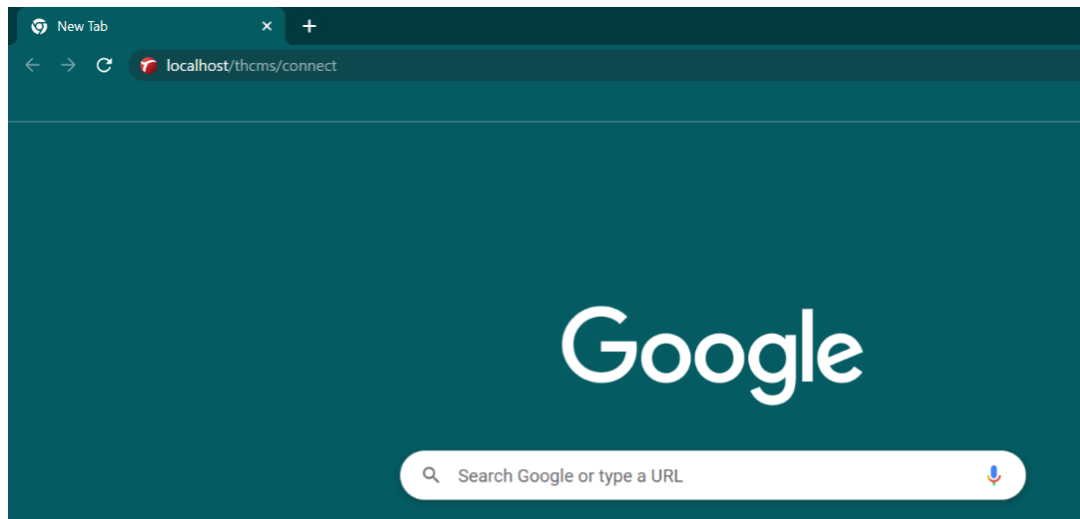
3. Copy the system files and transfer to the computer server.



4. Start the Apache and WAMP server.



5. Connect to the system through local host.



6. The system administrator can now use the system.

