DEVELOPMENT OF BARANGAY HEALTHCARE MANAGEMENT SYSTEM

A Thesis

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ABSTRACT

The development of a Barangay Healthcare Management System aims to create an integrated and technologically advanced platform to improve health delivery, promote effective patient management and improve overall health outcomes in local government. This system aimed to streamline healthcare processes through a web-based application that includes core functions such as an appointment booking system, online consultation services and comprehensive user management. The appointment system provides a structured approach to the planning and management of health consultations, ensuring timely access to health services for residents. The online consultation function facilitates medical consultation, diagnosis and treatment through digital platforms, improving accessibility for barangay residents. User management ensures effective management and control of user accounts and access rights. Various tools are used in the development process, such as PHP for programming, Figma for UI/UX design, HTML, CSS and JavaScript for user interface development, MySQL for database management, Laravel as a framework and Visual Studio Code as an integrated development environment... (IDE). The project also included a thorough evaluation and improvement of the functionality and accuracy of the system to ensure that it meets the desired performance standards and effectively serves the health services of the local community. This initiative is expected to significantly improve the efficiency and quality of health services provided by Barangay, which will ultimately lead to better health outcomes for its residents. It was also evaluated as acceptable by 30 respondents including It professionals, official of the healthcare, professionals, and residents of the barangay with a grand weighted mean of 2.54.

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INTRODUCTION

Background of the Study

The Philippines is a country with a population of over a 100 million, faces differences challenges in providing equitable and accessible healthcare services to its citizens. Barangay play a pivotal role in delivering primary healthcare, disease prevention, and health promotion programs to their respective communities. However, fragmented systems, manual processes, and resource shortages frequently impose limitations on the efficiency and efficacy of healthcare service delivery within Barangays.

Healthcare system in the Philippines is distinguished by public and private healthcare providers. Hospitals, clinics, and primary care institutions are managed by Barangays in their areas of responsibility. However, their inability to offer dependable and efficient and efficient services is hampered by the lack of a standardized and integrated healthcare management system. The timely and accurate provision of care is hampered by manual record-keeping, fragmented communication, and restricted data sharing between healthcare units within Barangays.

The fast development of technology has transformative changes in the healthcare sector globally. Electronic Health Records or EHR, Telemedicine, Data analytics, and other digital solutions have shown immense potential in enhancing patient care.

This study focused on the usability, security, interoperability, and scalability, on it intends to design, develop, and implement an integrated Barangay Healthcare Management System in the Philippines. If implemented properly, healthcare access, patient outcomes, administrative burdens, and resource use will all be improved. The

system can aid the nation's attempts to use technology for better healthcare governance and to accomplish the goals of the UHC law. The creation of an integrated Barangay Healthcare Management System in the Philippines has the potential to revolutionize the provision of healthcare services, fortify infrastructure, and improve the general wellbeing of the populace.

Objectives of the Study

General Objectives:

The objective of developing a Barangay Healthcare Management System is to establish an integrated and technologically advanced platform that enhances healthcare service delivery, promotes efficient patient management, and improves overall healthcare outcomes within the Barangay.

Specific Objectives:

1. To design a web-based Barangay management system with the following features:
   a) Appointment System - A structured and organized approach to scheduling and managing healthcare consultations or services for residents within the local community, ensuring efficient and timely access to healthcare resources.
   b) Online Consultation - The provision of medical advice, diagnosis, or treatment through digital platforms, allowing residents of a barangay.
   c) User Management - The administration and control of user accounts, permissions, and access within the system.

2. Develop a Barangay Healthcare Management System web-based application Using the following tools.

   a.) PHP (Programming Language)

   b.) Figma((UI/UX) design)

   c.) HTML (Programming Language)

   d.) CSS (Programming Language)

   e.) JavaScript (Programming Language)

   f.) MySQL (Database)

   g.) Laravel (Framework)

   h.) Visual Studio Code (IDE)

3. Evaluation and enhancement of the system's functionality and accuracy.

4. Utilize the standards for the ISO 25010 quality software model to determine the level of acceptability.

Scope and Limitations of the Study

The scope of this thesis is to develop a system for Barangay Health Care Center that covers transactions such as Appointment, Health Records, Security Login System. The limitation of this thesis is limited to the users who interact with the program including doctors, patients, and admin.

Significance of the Study

The development of an Barangay Healthcare Management System focuses on the advancing and development of electronic healthcare records within the contexts of Barangay. The study has several important significance and potential beneficiaries:

This thesis is on the *Development of Barangay Healthcare Management System* and there are specific groups that hold important roles inside the system.

Doctor – Providing medical professionals with tools and resources to manage patient care and platform to effectiveness and efficiency of the Barangay healthcare system.

Patients – Giving the resource and platform to access healthcare consultation, results, and discussion.

Barangay – the workload inside Barangay Healthcare with efficiency and the offering of services by a local government. Additionally, it encourages responsibility, openness, and participation from citizens.

Faculty – Faculty may act as mentors, providing guidance and support to students participating in the development process.

Student – Students may also act as users and testers, providing valuable feedback on the system's usability and functionality. Also actively involved in coding and implementing the Barangay Healthcare Management System.

Administrator – Administrators oversee the implementation and maintenance of the system. They are responsible for coordinating with developers, ensuring system security and compliance, and managing system updates and improvements.

Chapter 2

CONCEPTUAL FRAMEWORK

This chapter presents a review of literature and related studies that have relevance to the study. It includes the conceptional model and the operational definition of terms.

Review of Related Literature and Studies

Related Literature

In general, the healthcare system in the Philippines is of a high quality. Medical staff in the Philippines are highly qualified, though the facilities they work with are of a poorer quality than those in high-end US or European healthcare institutions. "Although public hospital staff are highly skilled, public healthcare in the Philippines still has significant geographical disparities. The Philippines' public healthcare system is outstanding in metropolitan areas yet inadequate in rural areas. An enormous number of Filipinos rely on public healthcare. Yet, there is a trend for Filipino medical staff to emigrate to Western countries, which puts the system under strain. As a result, certain hospitals are understaffed, and patients may see a delay in treatment." (Fran 2022). The impact of low prices makes public healthcare more popular to the communities. "The health system responds to the population's needs via provision of services and is closely linked to health administration/management. Addressing previously encountered health system related issues, through improved health management and administration, constitute health system responsiveness." (Xerxes Seposo, 2019). The high demand in the

Philippine Healthcare System are Health financing, Improved Cycle of Transactions, New infrastructure, Solidification of networks, and Secured System. Now e-health becomes a trend that helps developers create an opportunity for (1) Patient registration and maintenance for patient records, (2) Telemedicine, (3) Calculation of illness and other risks, (4) Stocking, distribution and prescription of medicines, (5) E-billing for each transaction, (6) Software system for hospital, laboratory, and pharmacy, and (7) Clinical decision support services.

Community Health and Healthcare Management

ANILAO (2021) mentioned that "In today's modern world, healthcare workers are seen as modern heroes, especially in the light of the COVID-19 Pandemic, as they are directly touched by the outbreak. The goal of this research study is to identify the Management Support System coming from the Local Government Unit of Koronadal City provided to the health workers. This study investigates whether healthcare workers are satisfied with the Barangay's Management Support System, its effectiveness, and how Healthcare Workers cope with their stress and anxiety during the COVID-19 outbreak."

Dodd et al. (2021) expressed that "In many low- and middle-income countries (LMICs), community health worker (CHW) programs are a crucial tool in the delivery of universal health coverage (UHC). The quality and efficacy of CHW programs may vary between settings in nations with decentralized health systems, like the Philippines, due to disparities in budget distribution and local politics. The goal of this study was to investigate how the governance and management of CHW programs influenced the experiences of CHWs (Community Health Worker) across various contexts, particularly

in the context of health system decentralization and the push toward UHC in the Philippines."

Lam et al. (2020) discussed that "The Universal Healthcare (UHC) Act's adoption confirms the State's dedication to preserving the health of every Filipino. To reduce fragmentation in the provision of healthcare services, one goal of the Act is to unify the various municipal health systems at the province level. Effective cross-sectoral interactions amongst diverse stakeholders are required for this huge project at both the local and national levels."

Britto et al. (2018) stated that "In order to ensure innovation, quality, and value at the point of care, the US National Academy of Sciences has called for the creation of a learning healthcare system in which patients and clinicians collaborate to choose care based on the best available evidence and to foster discovery as a natural outgrowth of every clinical encounter. The idea of a learning healthcare system has, however, mostly remained idealistic. To realize the goal of the Learning Healthcare System, researchers, clinicians, and families have worked together for the past 13 years with assistance from our pediatric medical center to design, develop, and implement a network organizational model."

Azuela et al. (2020) mentioned that "There are four tiers of governance in the Philippines: national, provincial, municipal, and barangay. As the country's fundamental political division, the barangay level assessment of disaster preparedness and mitigation is essential to the local government's performance management. Health issues can arise during disasters, and the role of the medical system is especially important. This essay tries to emphasize survey design to evaluate the Fuzzy Analytic Hierarchy approach to

assessing the healthcare resilience of barangays. The survey's layout is examined in one of the country's barangays, which acts a model for figuring out what has to be prioritized for creating programs to promote health resilience in additional barangays."

Krakauer and Wade (n.d.) stated that "The use of embedded case managers appears to have led to improvements in health care quality. Nearly all medical groups participating in the embedded care program with over 200 enrolled patients have met their performance targets. "A similar approach could be adopted to provide more personalized and effective care to residents. By integrating case managers into the system, healthcare quality can be improved, and performance targets can be met more consistently, benefiting the community's health and well-being.

The study of Altura et al. (2023) Developed a web- based barangay health information system portal for Barangay 69 District 1 in Tondo Manila. The system would be a reference tool for barangays as their platform provides inventory management, the barangay's health programs, and a dashboard for data visualization inventory management, tracking of Covid cases, administration of health activities, and a dashboard for data visualization. As a result, the web portal is functional, and different test scenarios show above-average results. The study concluded that the system provided a platform for the barangay and its residents. It also concludes that it is user-friendly and efficiently disseminates the barangay's health programs and activities. This web-based portal represents a step toward modernizing and improving healthcare management at the local level. It offers an example of how technology can streamline healthcare information, making it more accessible and transparent to the community.

Zeng and Wu (2019) mentioned that "The resources of public health services are weak, too. The quality of medical care is low, accidents are frequent, and patient safety is difficult to guarantee. Expensive medical expenses are unbearable for patients. In response to the above problems, we will propose the Internet as a carrier and information technology such as mobile Internet technology, cloud computing, Internet of Things, Big Data, etc." Approach can be employed to strengthen healthcare services within barangays. By using technology and internet-based solutions, healthcare can be more efficiently managed, improving access to medical resources, and ensuring the delivery of quality care. The platform can serve as a valuable tool for both healthcare professionals and residents in bargains.

Nawaz and Dad (2021) Is study focused on offering a biomedical device which is available in proximity/ near far location from place of occurrence. Asset management systems exist which can only be provided the location of desired biomedical device but did not consider the near far location from the place of occurrence. Moreover, our system is also capable to keep track the biomedical devices by its location. This technology could help ensure that critical medical equipment is readily available when needed and provide a way to track device locations, improving healthcare delivery in barangays.

Lubis et al. (2021) elaborates that to improve health levels, good health literacy is required, in which Indonesia still categorized as low in health awareness. Someone with low health literacy will experience more challenges when using or accessing health care system, especially to identify or being aware about Internet addiction. Principles of user-centric design and the use of technology can be applied to streamline healthcare

processes at the local level. Such technology can enhance health literacy and make healthcare services more accessible, promoting better health outcomes within barangays.

According to Herrera et al. (2021), "Dr. Andrea Carag of The Pediatric Clinic mentioned that the problems she encountered in similar applications include difficulty in signing in, unpleasant graphical user interface, and accessibility issues for different platforms. An initial survey for patients was also conducted, and reflecting on the result, factors like the minimal health services available online, minimal specialists, and inaccessible health assistance will be what the proponents aimed to address. PediatriX represents a way to expand healthcare services and make them more accessible to the community. By offering online pediatric consultations, the system can address the healthcare needs of children in barangays, improving accessibility and reducing the risks associated with physical visits to healthcare facilities.

Chafekar, Sundas, and Sharma (2021) expressed that implementing this idea, technology can be a blessing. In everyday life, people order food and cab within minutes and watch live stock market points and sports results on their mobile phones from time to time; where many businesses are successful only because they are able to meet the needs with greater management our technology can be used to provide people around the world with a simple Virtual Hospital web system that simplifies the Hospital Health Care process to help patients, doctors, labs, and chemists. Relating this to the creation of a barangay healthcare management system, similar technology can be used to streamline healthcare processes within a local community. It can simplify appointment booking, facilitate virtual consultations, and even provide access to necessary medications.

Go, Taniog, Ventura, and Vergara (2021) emphasized that public health is one of the most key factors to prioritize at the barangay level. The analysis of healthcare status enables barangay officials to have insights for future programs. The primary intent of this study was to develop an intelligent healthcare system named VHISION for Barangay Barangka Drive in Mandaluyong City that provides a dashboard of data visualization from the analyzed electronic health records (EHRs) of the patients who had consulted in the Makabayan health center and helped to propose and implement health-related programs. In essence, VHISION serves as a critical tool in creating a comprehensive barangay healthcare management system. It collects and analyzes patient data, supports decision-making by local officials, and helps in the formulation and execution of effective health-related programs. By incorporating descriptive analytics and engaging the community's key stakeholders, VHISION addresses specific healthcare challenges within the barangay, contributing to better public health management and outcomes.

According to Garcia, Jimenez, et al. (2021), "Health is important in human life. Good health protects us from diseases or any other medical illnesses. In some rural areas in the Philippines, it is challenging for people to access basic healthcare services as well as disseminate the health information or announcements through their barangay health center, subsequently, it makes it difficult for them to get the aid they needed. This could lead to health complications and the worst is it can increase the mortality rate within residents in remote areas. The researcher proposes a study that will develop a mobile and web application for Barangay health centers in rural areas. The system can cater to many barangays to update them, it will strengthen the meeting cycle or consultation processes quality, in other words, the application aims to improve patient monitoring and deliver

health announcements to lessen their challenges throughout the rural community." Health is crucial for human well-being and disease prevention. However, in certain rural areas of the Philippines, accessing basic healthcare and health information is challenging, leading to potential health complications and increased mortality rates. To address this issue, a researcher suggests creating a mobile and web application for rural Barangay health centers. This application would serve multiple barangays, enhancing the quality of consultations and patient monitoring while facilitating the distribution of vital health announcements. The goal is to improve healthcare accessibility and outcomes in these remote communities.

Digital Transformation

According to Cli'ne and Luiz (2021), "Global references demonstrate that information technology (IT) has the ability to assist in this regard through the automation of processes, thus reducing the inefficiencies of manually driven processes and lowering transaction costs."

Fengou et. al (2021) stated that their proposed profile management system is applied on an e-Health tele-monitoring system in a cloud computing environment for providing monitoring services to patients suffering from chronic diseases remotely. It was consider that the e-Health telemonitoring system integrates a wide spectrum of participating entities including patients, doctors, nurses, family members, a hospital, a smart home, an office, and a vehicle. The participating patients, doctors, nurses, and family members are considered as the users of the e-Health tele-monitoring system.

According to Mahmud, Soroni, & Khan, (2021), "It is difficult to keep track of one's all medical records. When a person suddenly falls sick, he/she may not have his/her medical documents with him. Hence, we decided to develop a project which is a medical app for both android and iOS that will always give access to a user's medical records and history." A similar approach could be adopted to streamline the management of healthcare records within the community. By implementing a user-friendly digital platform, residents can access their medical records and share them with local healthcare providers, improving the efficiency of care delivery in barangays.

Devi et al. (2021) said that "This system facilitates the patients to book appointments online and to view their medical profiles. It also enables the doctors to see their appointments and provide online prescriptions, considering the patients' medical history. This system allows administrators to manage all the medical data and lets the laboratory section upload reports online thereby providing contactless medical reports and sends reminders through email regarding upcoming appointments. The website developed is a three-user dynamic system that manages data effectively and provides a sturdy database system." In creating a barangay healthcare management system, a similar database management approach can be employed to streamline healthcare data, appointments, and communication within the community. This system can serve as a valuable tool for barangay healthcare centers, ensuring efficient data management and accessibility while minimizing physical contact and improving the delivery of healthcare services to residents.

Miranda et al. (2021) stressed that "Telemedicine technology was frequently used for consultation and other clinical services that could be delivered remotely. This

research aimed to develop a health care mobile application for sub-district primary health care. This application could be considered as an additional channel for health care services to relate healthcare personnel and patients without boundaries. The major features were developed namely Registration, Consultation, Visiting schedule, Referral hospital and News. System Development Life Cycle (SDLC) waterfall was performed as an application development method. "In the context of creating a barangay healthcare management system, such a mobile application could serve as an essential component. By offering features like registration and consultations, it connects healthcare personnel and patients efficiently, improving access to healthcare services. Additionally, visiting schedules and hospital referrals can streamline the healthcare process, making it easier for barangay residents to receive the care they need. The integration of news updates keeps the community informed about health-related developments.

Gumabay and Corpuz (2021) emphasized that "Nowadays, technology is crucial since it improves quality of life. folks were able to make labor easier and more convenient and quicker. And because of technology, man's labor was more exact and reliable at producing results. This research was carried out to eliminate manual processes that People deceive and take actions that benefit them. Technology is the factor that most significantly influences our contemporary lifestyle. printed medical information by person could be a part of a paper-based medical record. Information systems that might be challenging to find and update and distribute to others. Paper-based records are vulnerable. to material loss and harm brought on by a natural calamity." This type of technology and approach can be integrated to improve the management of healthcare resources, patient information, and inventory at the barangay level. By digitizing and

centralizing data, it facilitates more efficient and informed healthcare decision-making, benefiting both healthcare providers and residents in the community.

Cordero Jr. (2022) mentioned that "In the second function, creating resource developments involves the presence of a well-performing health workforce, a well-functioning health information system, and a system that ensures equitable access to essential medical products, vaccines, and technologies of assured quality, safety, efficacy, and cost-effectiveness." These same principles apply. By acknowledging the issues and working collaboratively, local communities can build a more resilient and effective public health system. The development and implementation of such a system at the barangay level can contribute to improving healthcare services, access, and overall public health. It is a step toward creating a more robust healthcare system that better serves the needs of the community.

Cid de la Paz et.al (2017) stated that "In this work, an automatic and intelligent system for integrated healthcare processes management is developed on a constraint-based system. This project has been carried out in collaboration with a real assisted reproduction clinic. Our goal is to improve the efficiency of the clinic by facilitating the management of the integrated healthcare system." This project focuses on creating a smart system for managing healthcare processes, particularly in an assisted reproduction clinic. The objective is to enhance the clinic's efficiency by streamlining the management of healthcare services. While the project is specific to a clinic, the principles and technologies used, such as intelligent automation, can be adapted and scaled to create a barangay healthcare management system.

According to Muhammad and Garba (2019), a variety of literary works over the years have revealed the roles that information systems (IS) play in healthcare services. They used two words to define information systems, these are systems and information. As the procedure moves forward, information is considered examined data, whereas a system is a collection of a limited number of components combined to achieve goals. Most of the time, information systems often comprise smaller systems called subsystems, which all work to ensure the effectiveness of the big systems, medical records for patients are amassed during the clinical operations, data like patient records, and therapy data from other sources, inventory stocks, and records. As the healthcare services are becoming more sophisticated. Manual patient exchange is tough for practitioners. information from one healthcare file to another and vice versa a different practitioner. Consequently, several of the important Among the issues are inadequate rapid information storage and retrieval, inadequately prepared accurate and timely reports, incomplete updates, manual calculations that are prone to error."

Zakiah et al. (2020) expressed that Information systems and database management are Technology-related (SI/TI) knowledge is crucial because (SI/TI) serves as a supplemental tool for improvement. performance and making choices considering the data. The ability to process data swiftly, precisely, and effectively is an essential requirement for any institution or organization to make work more efficient, faster, and more expensive. Making advantage of a computer because of technology and information widespread and accessible to the public not only not just in the workplace but also in health care ambiance. One of the basic demands is the utilization of health services. Along with the value of health is becoming more widely understood by the people, one of

the organizations that addresses problems with health services. Creating a barangay healthcare management system, SI/TI knowledge plays a critical role. By using technology and information systems, the system can efficiently manage healthcare data, streamline processes, and make informed decisions.

Torkudzor et al. (2020) mentioned that "The goal of a health information system is to better and enhance the administrative efficiency, data accessibility, and quality of care provided to individuals. Despite serving crucial purposes, the manual manner of maintaining medical records has put them in grave danger. This method of collecting records includes writing down patient information on sheets of paper, storing them in folders and keeping them in cabinets. This is a poor method of recordkeeping that wastes time and results in the loss and mismatch of patient data. In addition, large, heavy, and takes up a lot of workplace space. In this study, a comprehensive web-based health information system is created to address these issues and enable users to manage policy details effectively."

Evans et al. (2009) emphasized that "Measuring healthcare quality has become an increasingly important task for regulating bodies and healthcare institutions. Strategically chosen quality indicators provide a means of understanding the quality and safety of the healthcare system. Current frameworks developed to determine aspects of care to be measured do not provide the level of precision required to ensure that indicators are best selected to enable focused action to improve health."

According to Voinea, and Pamfilie (June 2009), "An integrated management system is a logical and systematic managerial approach, which permits taking-up optimum strategic and operational decisions. These decisions take into consideration all

the essential aspects which lead to an efficient functionality of health organization, in terms of quality, environment, security and occupational health, and information security. Healthcare, hospital, quality, integrated management system."

Related Studies

The following studies were focused related to the present study:

Quality Healthcare in the Philippines

According to Flores, Tonato, Dela Paz, and Ulep (2021), "Health facility location is a critical factor in strategic planning of healthcare programs. A well-placed health facility increases uptake of essential healthcare services and improves health outcomes especially among vulnerable populations. In many low and middle-income countries (LMICs), the decision to build health facilities is traditionally based on political and pragmatic considerations. Consequently, the location of most health facilities is typically far from optimal. In recent years, governments are now increasingly interested in studying where to build health facilities to facilitate the achievement of health system goals." Healthcare facilities are essential for providing basic and comprehensive services to individuals, families, and local communities. The UHC law aims to augment the country's primary healthcare system by 2025, focusing on primary care facilities (PCF) or rural health units (RHUs). The study aims to identify optimal locations for these facilities while considering distance, hazards, and the existence of other healthcare facilities, ensuring they serve the most people while minimizing risks.

Based on study of Ulep, Uy, Casas, and Nuevo (2021), "A substantial number public and private hospitals do not practice systematic target management. For instance, only 60% of hospital respondents have a benchmarking system and the same percentage conduct regular meetings to revisit performance targets. Our findings require deeper assessment to determine the 'quality' of benchmark exercises and understand how they typically apply such an approach in their management and operations. In other countries, standardized quality benchmarking systems and tools are in place as reimbursement and regulatory requirements (e.g., US AHRQ), and this is not the case in the Philippines."

- Stockouts are present in all the hospitals, both public and private.
- Less than half (40%) of the hospitals were able to carry drugs with no stockout with the largest proportion from private hospitals (46%) followed by Barangay-owned (31%) and national hospitals (21%) All hospitals have forms of communication.
- However, some lack dedicated phones for patient referrals.
- Communication across health facilities is extremely critical in a continuum of healthcare service delivery.
- While 98% of the private hospitals have dedicated phones for referrals, in public hospitals, only 85% and 91% (national and Barangay-owned hospitals, respectively) have one.

According to Marilou (2002), "As the population grow overtime, organizing small population groups such as Barangays faces difficulties and challenges in organizing and managing data information coming in and out of their office, due to its lack of system, managing the files of their community members mostly rely on processing them using

MS Word or Excel manually without using any database to keep them secured, centralized and shared to its organization, without a central data storage and system the organization's files and data can be prone to mishandling of data or worst data corruption." Without a centralized system for data storage and management, there is a risk of mishandling or even corruption of important data. This emphasizes the need for a more efficient and secure solution, like a Barangay Healthcare Management System, to streamline data handling, improve organization, and protect sensitive information within the local community.

According to Ronel (2022), "The use of software models to create information systems made it possible. To support the healthcare of the community, the appearance of Rural Health Unit is much needed. This study will discuss the problems encountered by the health professionals and health workers of Rural Health Unit in the Province of Alaminos, Laguna on the existing manual processes of storing and retrieving of patients' data that are used in assessing the public health of the community." Community health worker (CHW) programs are a valuable resource in the implementation of universal health coverage (UHC) in many low- and middle- Warren (2021) "Income countries (LMICs). However, in countries with decentralized health systems like the Philippines, the quality and effectiveness of CHW programs may differ across settings due to variations in resource allocation and local politics. In the context of health system decentralization and the push toward UHC in the Philippines, the objective of this study was to explore how the experiences of CHWs across different settings were shaped by the governance and administration of CHW programs." This research is connected to the creation of a Barangay Healthcare Management System by emphasizing the importance

of effective governance and administration in ensuring that healthcare programs at the local level, such as those run by CHWs, are well-structured and contribute to the broader goal of achieving Universal Health Coverage (UHC) in the Philippines. It underscores the need for efficient systems to support and coordinate healthcare efforts at the barangay level.

According to Bacungan (2021), "Hypertension has been a leading health issue in the Philippines where more than 500 thousand deaths in 2016 are a result of cardiovascular diseases and cases are rising from low- and middle-income areas. To address this issue, the team had developed a web and mobile application capable of providing synchronous and asynchronous telerehabilitation for patients in selected barangay in the province of Laguna. The mobile application is designed for healthcare providers to provide synchronous consultation for patients through evaluations and personal messaging and asynchronous functions where patients can download brochures provided by healthcare providers to treat their condition without the healthcare provider's supervision." By introducing technology-driven solutions that enhance healthcare access and management at the barangay level, particularly for critical health issues like hypertension. It emphasizes the role of digital tools in improving healthcare services and empowering both healthcare providers and patients.

Taruc (2023) stated that, "A barangay plays a vital role in the development and progress of a country, requiring careful attention and improvement. To address the need for advancements in barangay processes, this study focused on designing, developing, and assessing a web-based barangay document requesting system called Docu-Go. The researchers employed a developmental research design, involving IT experts and

residents from a barangay in Cabanatuan City, Nueva Ecija, Philippines." This initiative is connected to the creation of a Barangay Healthcare Management System by introducing technology-driven solutions that enhance healthcare access and management at the barangay level, particularly for critical health issues like hypertension. It emphasizes the role of digital tools in improving healthcare services and empowering both healthcare providers and patients.

According to Quilon and Singun (2019), "The inequality in healthcare access remains more serious by the shortage of health workers and providers resulting to slower and less efficient delivery of healthcare services in the country. In the Province of Ilocos Sur, one of the main problems is the prolonged waiting time during medical consultation apart from the unavailability of Municipal Health Officer (MHO) in some of the municipalities in the upland. However, there are Rural Health Midwives who are assigned in every Rural Health Units (RHUs) and Barangay Health Stations are being established in which Barangay Health Workers (BHWs) are dynamically working to respond to the immediate primary healthcare needs of the community." System by emphasizing the importance of optimizing and coordinating the roles of healthcare providers and workers at the barangay level. By creating a digital healthcare management system, healthcare access and service efficiency can be improved, helping to bridge the healthcare inequality gap and ensuring better healthcare delivery to communities.

According to Castro et al. (2022), "As a result of the growing population of persons with disabilities and senior citizens in the city of Makati City Philippines, there is a high demand for medical consultations and medication. The need for process improvement that will answer the health tracking and prescriptive medicine delivery monitoring system

is needed. Previous studies relating to delivery systems and automated scheduling has influenced the research regarding building a web-based system that allows persons with disabilities and senior residents to easily maneuver around the restrictions of COVID-19." This system is designed to assist persons with disabilities and senior residents in navigating the restrictions brought about by COVID-19. This is connected to the creation of a Barangay Healthcare Management System by emphasizing the importance of using technology to improve healthcare accessibility and delivery, particularly for vulnerable populations. It underscores the role of digital solutions in providing efficient healthcare services and medication management at the barangay level.

Web-based Medical Services

Shan Huei Wang (2017), study also offered some practical suggestions for telemedicine providers and hospitals wishing to promote Web-Based Medical Services. Patients are accustomed to face-to-face clinic services; they do not like communication via the Internet, especially if they are elderly. This study suggested that telemedicine providers emphasize technology attractiveness and the medical credibility of WBMS when introducing the service to new patients. WBMS combines online and offline services, and therefore, too much emphasis on the technology side of WBMS without considering the contributions of medical innovation and medical support may not appeal to the general population. This study suggested that the telemedicine providers and hospitals should pay attention to the convenience of technology (online) and medical credibility (offline) and educate patients on why prevention is better than treatment and why immediate medical intervention is important."

According to Ferruci, et. al. (2021), "eHealth technology allows better management of complex health care aspects in the follow-up of chronic complex disease patients but translating the UCD (user-centered design) into GUI (graphic user interface) features of an eHealth app is a challenging task. The decision to use patient self-management and co-responsibility as the basis for an eHealth information system seems to have been successful in enhancing the probability of matching the needs of the target population. Moreover, usability is significantly improved when the GUI is designed according to patients' UCD mental models and when new media and medical literacy are promoted. Its potential applications in an era of greater sociosanitary distancing are certainly of particular interest."

Junaid et al. (2022), "In recent times, the growth of the Internet of Things (IoT), artificial intelligence (AI), and Blockchain technologies have quickly gained pace as a new study niche in numerous collegiate and industrial sectors, notably in the healthcare sector. Recent advancements in healthcare delivery have given many patients access to advanced personalized healthcare, which has improved their well-being."

According to Macrohon et al. (2020), "High-Risk Pregnancies, one of the common causes of Maternal Mortality, can be reduced by simply knowing the risk factors and preventing complication. This case study involves the Municipality of Taytay, one of the densely populated areas of Palawan, an isolated island west of the Philippines where 14 out of 31 villages are Geographically Isolated and Disadvantaged Area (GIDA). The common concerns of the people involved in maternal health implicate the lack of labor. This is where Information and Communications Technology or ICT can help them to serve the isolated communities they are serving. The study creates a framework to

address these concerns and leverage the use of Information and Communication Technologies to better provide healthcare to those who need it most." the shared goal of leveraging technology to improve healthcare delivery at the barangay level. By using ICT tools, such as a healthcare management system, barangays can bridge the gap in healthcare access and reduce maternal mortality by addressing risk factors, ensuring timely care, and preventing complications, which is crucial for the overall well-being of communities.

According to Camasin et al. (2023) stated that, "Effective communication between providers and patients is one of the most key factors for achieving better health outcomes in the delivery of healthcare and to achieve effective communication, the use of the right communication strategy is beneficial. In relation to this, Barangay Health Workers (BHW) are exposed to a lot of interpersonal communication between them and their constituents. With the lack of studies on BHW, it is important to understand the nature of their work by exploring the interpersonal communication strategies they use and how it helps them resolve healthcare miscommunication in their areas." This is connected to creating a Barangay Healthcare Management System by emphasizing the significance of effective communication in healthcare. A well-designed system can support BHWs in their communication efforts, ensuring that important health information is accurately conveyed to the community, improving healthcare delivery and outcomes at the barangay level.

According to Batoon and Piad (2023), "The system created aims to produce an online vaccination appointment scheduling system with geo-tagging integration and a decision-support mechanism for neighborhood health clinics. With a decision support

mechanism that suggests the essential vaccines based on their account details, it is made to meet the unique vaccination needs of each patient. The system includes immunizations that are accessible locally, and patients and midwives can manage their own corresponding information through personal accounts." The system covers locally available immunizations, and both patients and midwives can manage their personal information through individual accounts. This initiative is connected to creating a Barangay Healthcare Management System by emphasizing the role of technology in improving healthcare access and vaccination services at the barangay level. It underlines the importance of personalized healthcare solutions and efficient management of healthcare data to enhance healthcare delivery and patient outcomes.

Luciano (2023), "Conducted a study with the main purpose of helping the residents of the municipality to speed up obtaining free medicine. In the current setup, someone who needs to use free medicine from the barangay or municipal health center visits the place to request maintenance medicine. This motivated the researchers to make a research study focusing on converting the manual requisition system to something that people can access quickly and comfortably without necessarily going out of their households, especially during these challenging times – the pandemic. The researchers called it a "Medicine Management System"." This is closely related to creating a Barangay Healthcare Management System as it underscores the importance of utilizing digital solutions to enhance healthcare access and management at the barangay level. It emphasizes the role of technology in improving healthcare services, especially during challenging times like the pandemic.

Synthesis of the Reviewed Related Literature and Studies

The literature review underscored the importance of developing a Barangay healthcare management system in the Philippines. It provides insights into the existing healthcare challenges and the potential solutions that such a system can offer at the barangay level. The healthcare system in the country, while high in quality, faces significant disparities, particularly in rural areas. There is an increasing demand for accessible, efficient, and responsive healthcare services. The Barangay healthcare management system aims to bridge these gaps by leveraging technology and data-driven approaches to enhance patient care, administration, and resource allocation. The literature discusses the need for integrated and responsive healthcare systems, especially in addressing high-risk pregnancies, disaster preparedness, and the healthcare needs of persons with disabilities and senior citizens. These issues are prevalent in many barangays, where access to healthcare is limited, and there is a shortage of healthcare workers. The adoption of technology, such as web-based portals, telemedicine, and biomedical devices, can improve healthcare access and management, leading to better health outcomes. The development of a barangay healthcare management system is not only an opportunity but a necessity. It offers the potential to unify healthcare services, ensure the efficient allocation of resources, enhance communication between patients and providers, and streamline healthcare processes. Such a system can serve as a valuable tool for local governments in managing public health, responding to the community's healthcare needs, and improving overall healthcare quality. In a country with geographical disparities and a need for healthcare reform, the Barangay healthcare management system is a critical step toward achieving a more equitable and efficient

healthcare system, benefitting both the healthcare providers and the residents of barangays.

Conceptual Model of the Study

The conceptual model shown below was created using the ideas, theories, and information gathered from the literature and studies previously stated. This model provides a framework for understanding the connections between the identified variables and a summary of the main results.

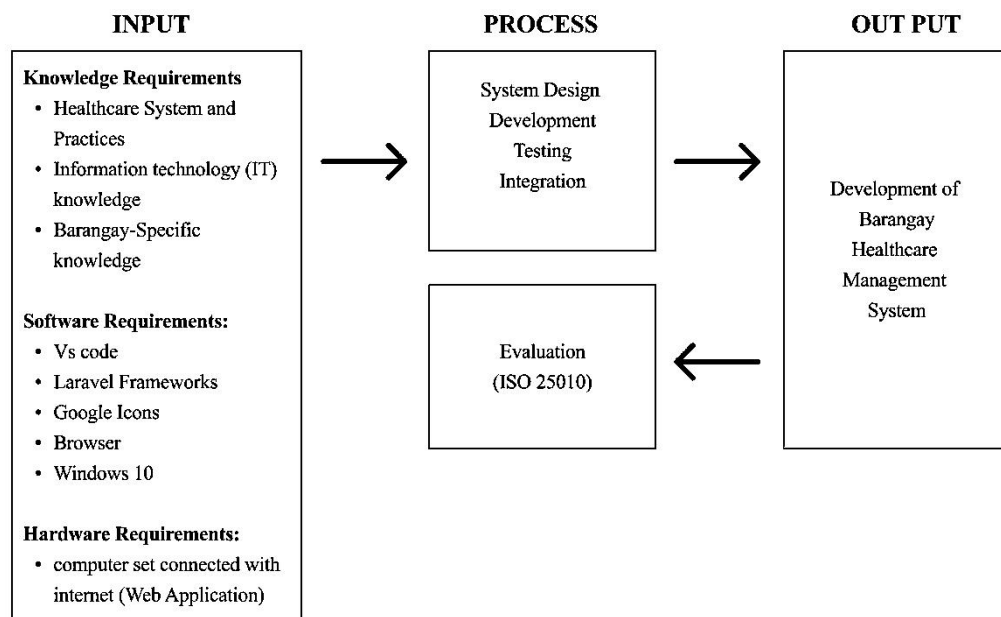| INPUT	PROCESS	OUT PUT
Knowledge Requirements • Healthcare System and Practices • Information technology (IT) knowledge • Barangay-Specific knowledge **Software Requirements:** • Vs code • Laravel Frameworks • Google Icons • Browser • Windows 10 **Hardware Requirements:** • computer set connected with internet (Web Application)	System Design Development Testing Integration Evaluation (ISO 25010)	Development of Barangay Healthcare Management System

Figure 1. Conceptual Model of Barangay Healthcare Management System

In this figure, it shows the conceptual model. It details the inputs, the process, and the expected outcomes. The system model visually represents the step-by-step workflow and activities that need to be carried out to finish the project study.

Input

The project knowledge requirements rely on various data sources, Healthcare Systems and Practices, Healthcare Management, Barangay Specific Knowledge, and information Technology Knowledge. The software requirements contain Vs Code for development, Laravel Frameworks for web application structure, Google Icons for visual elements, a standard web browser, and Windows 10 as the operating system. The hardware setup involves a computer connected to the internet to support the web application.

Process

The project development involved a series of stages, each focusing on specific tasks. These phases included the system design, development, testing, training, and integration of the system. Each stage of developing and enhancing the project prototype contributes to the entire process.

System Design: Using the user requirements as a guide, develop a complete system design that includes data structures, user interfaces, and system architecture.

Development: Utilize features like electronic health records, appointment scheduling, and resource management when developing the system in accordance with the design specifications.

Testing: Provide training sessions for healthcare staff and administrators on how to use the new system effectively.

Integration: Integrate the system with existing databases, networks, and other components of the Barangay 's technology infrastructure.

Output

The final output is the fully developed and implemented Barangay Health Care Management System. This system acts as an innovative, centralized solution designed to improve healthcare management inside the Barangay.

Operational Definition of Terms

To facilitate understanding of this study, the following terms are defined:

Access Control System: A security method responsible for regulating and overseeing access permissions to a system, environment, or facility.

Accessibility: Accessibility refers to the extent to which something, such as a website, product, or environment.

Application: Refers to a software program or system that is accessible through a web browser.

Appointment Scheduling: Appointment scheduling refers to the process of arranging and organizing appointments, meetings, or events at specific dates and times, typically involving individuals, groups, or resources.

Barangay: The smallest administrative division in the Philippines, serving as the primary unit of governance and community organization.

Cloud Computing: Cloud computing is a technology and service delivery model that enables access to a wide range of computing resources, such as servers and storage.

Dashboard: A dashboard is a visual display of information that provides a concise and easily understandable overview of data.

Data Analytics: Data analytics refers to the process of examining, cleaning, transforming, and interpreting data to discover valuable insights, draw conclusions, and support decision-making.

Data Security: Also known as information security, refers to the practice of protecting digital information, data, and systems from unauthorized access, disclosure, alteration, or destruction.

Data Synchronization: refers to the process of ensuring that data stored in *multiple* locations or on different devices is kept up-to-date and consistent.

Developer: A developer, in the context of software and technology, is a professional who specializes in creating, designing, and programming software applications, websites, and other digital solutions.

Efficiency: Refers to the ability to achieve maximum productivity and desired outcomes with the least number of wasted resources, time, effort, or energy.

Electronic Health Records (EHR): Electronic Health Records (EHRs), also known as Electronic Medical Records (EMRs), are digital versions of patients' medical records and health information.

Feedback forms: Feedback forms, often referred to as "comment cards," "survey forms," or "evaluation forms," are structured documents or online questionnaires designed to collect opinions, comments, and feedback.

Integrated Healthcare Management: The comprehensive approach in the healthcare industry that aims to coordinate and streamline various aspects of healthcare services, systems, and processes to provide more efficient, patient-centered, and cost-effective care.

Interface: In software, a user interface (UI) is the visual and interactive part of a program that allows users to interact with the software using graphical elements like windows, buttons, menus, and icons.

Interoperability: Interoperability is the ability of different systems, technologies, or organizations to work together in a coordinated and effective manner.

Non-Technical User: Non-technical user, often called a "non-tech user," is an individual who lacks in-depth technical knowledge or expertise in technology.

Platform: A set of software tools, libraries, and components that provide the foundation for developing applications or services.

Privacy: Privacy is the right of an individual to keep their personal information,

Scalability: The scalability refers to the ability of a system

Security Login System: The security login system, also known as an authentication system or login/authentication mechanism.

Technical support: The service provided by individuals, teams, or organizations to help users or customers resolve technical issues, problems.

Telemedicine: Telemedicine is a healthcare practice that involves the remote diagnosis, consultation, treatment, and monitoring of patients using telecommunications technology.

Usability: How easily a new user can understand and begin to use the system.

User Authentication: Users are required to provide an identifier.

User Training: Introducing users to the product or system, explaining its features and capabilities, and helping them become comfortable with its interface.

User: Refers to an individual or entity that interacts with or uses a system

Web-Based: Refers to software applications, services, or systems that are accessible and run over the internet through web browser.

Chapter 3

RESEARCH METHODOLOGY

This Chapter contains the method used in the conduct of the study. It includes the project design, project development, operation and testing procedure, and evaluation procedure.

Methodology of the Study

This Web-Based Management System was designed to help Barangay(s) organize patient records and manage doctor's profile. The system allows Barangay(s) to effortlessly track the patient's record. The system's key features, which include the ability to view patient's record via computer, and book of appointment online, are all integrated within a web-based platform.

Project Design

User for the system has three categories: the Doctors the Administration, and the patient. The Administrator, who can control the functionality and growth of the system. This includes managing the records of the patient and managing the Barangay web-based system. Also, the Administrator and the Doctors are the only permitted to access the Records, and Analytics based on data consumed by the patient. These Doctors are registered and legitimate Barangay workers and pharmacists. Lastly, the Patient who can consult online and follow up online is permitted by the Administrator and Doctors.

System Design

Figure 2 shows the procedure of setting up a doctor account on a healthcare platform. Logging in as an administrator is the first step. Upon logging in, the administrator can fill out the doctor's information to create a new doctor account. The system generates the account and shows a list of all doctors after the details are submitted. After that, the administrator has the option to examine every appointment or export data in PDF, CSV, or Excel formats. Ultimately, the administrator has the option to log off the system.
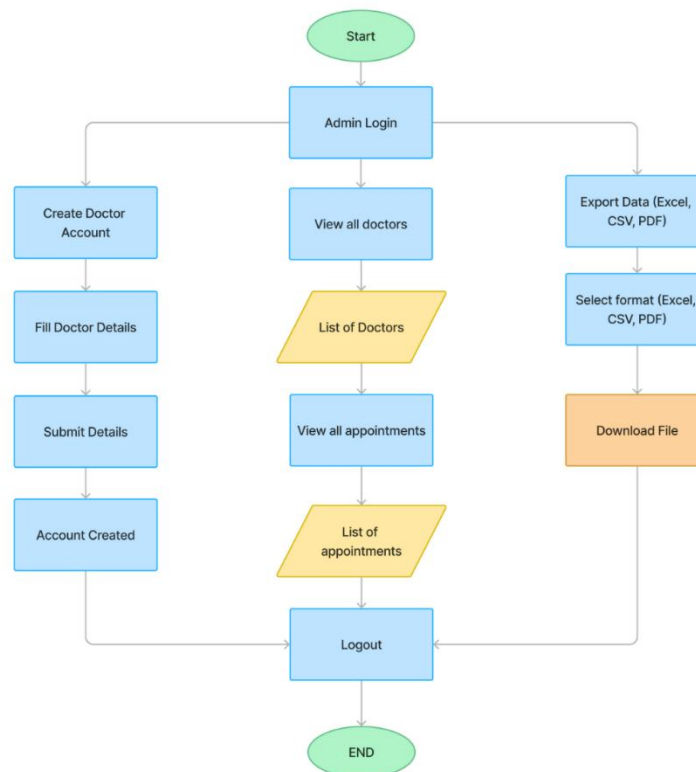

Figure 2. Flowchart Diagram of Barangay Healthcare Management System – Admin

The flowchart shown in Figure 3 shows the procedures needed to make an online appointment. The first choice is to select between an in-person visit or an online consultation. The user goes to choose the services they need if they decide to have an online consultation. After that, they are asked to provide their email address. The next step requires the user to provide their Barangay ID. The system then confirms the Barangay ID and confirms the appointment if it is legitimate. The user must obtain a queue number if the Barangay ID is invalid. The appointment confirmation signals the conclusion of the flowchart.
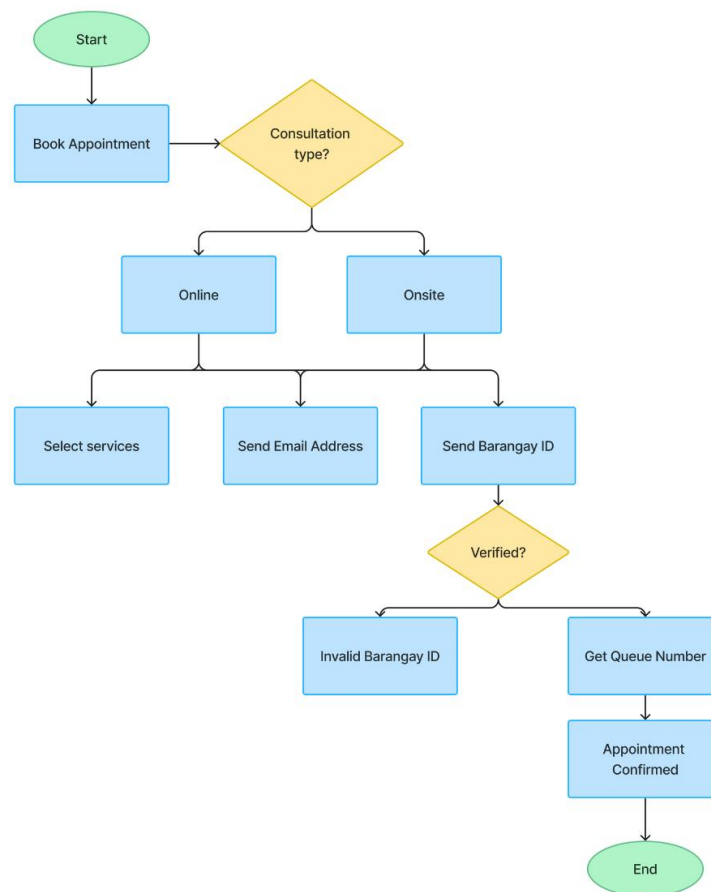

Figure 3. Flowchart Diagram of Barangay Healthcare Management System – Booking

Figure 4 shows the processes involved in making an appointment with a doctor are shown in this flowchart. A patient phones the doctor's office first. Afterwards, the flowchart divides into two routes based on whether the doctor's availability is verified. The patient has the option to select between an online consultation and an in-person visit if the availability is verified and there are appointments available. A link for the online consultation is supplied to the patient if they choose to have one. The patient comes to the location for the consultation if an onsite visit is selected. A follow-up is made with the patient if the doctor is not available or if no appointments are available.
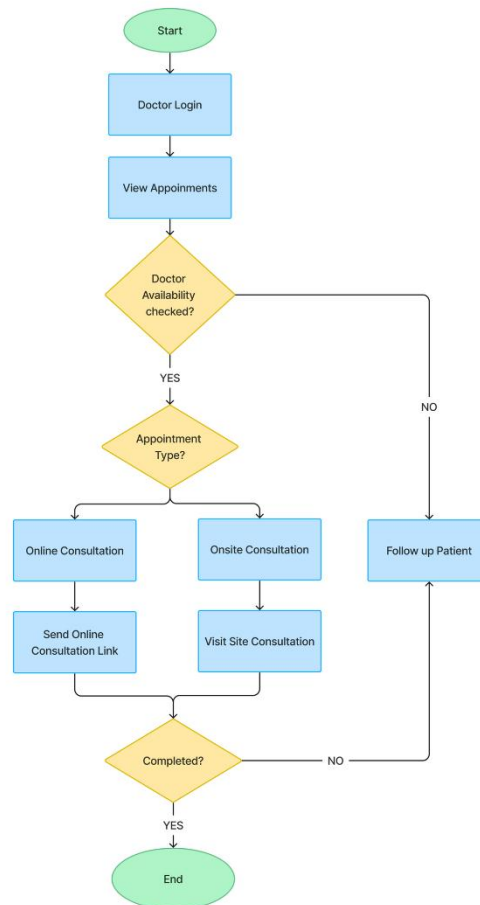
Figure 4. Flowchart Diagram of Barangay Healthcare Management System – Doctor

Figure 5 shows a visual representation of the system's inputs, outputs, and the external entities that may use it. Administrator, Doctors and Patient make up the major three external parties with which the system can communicate. These entities will supply the system with inputs and get outputs from it.
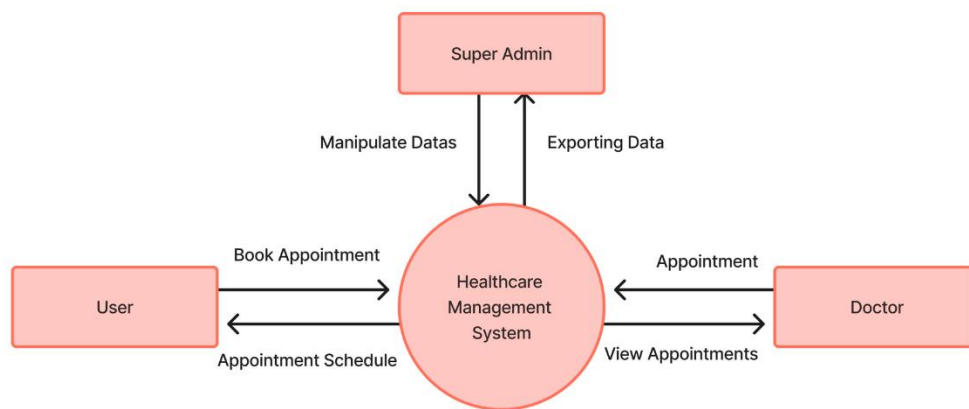
Figure 5. Context Diagram of Barangay Healthcare Management *System*

In its intended use, the system has been created to meet the requirements of the Administrator, Doctors, and Patient within its scope. The system has been created to lessen human error and make an innovative way to consult and record of accomplishment of health care facility. The system provides doctors with several capabilities, such as the capacity to consult online with the patient and follow up checkup, The administrator has

access to tools that allow them to keep an eye on and control system operations, user interactions, and user accounts, all of which are regularly examined to ascertain how the system is being utilized.

Software Design

The use case diagram as shown in Figure 6 depicts the scope of the systems software. It shows how External entity –admin interacts with the system. The diagram illustrates the expected functionalities, behavior and system requirements

Figure 6. Case Diagram of Barangay Healthcare Management *System*

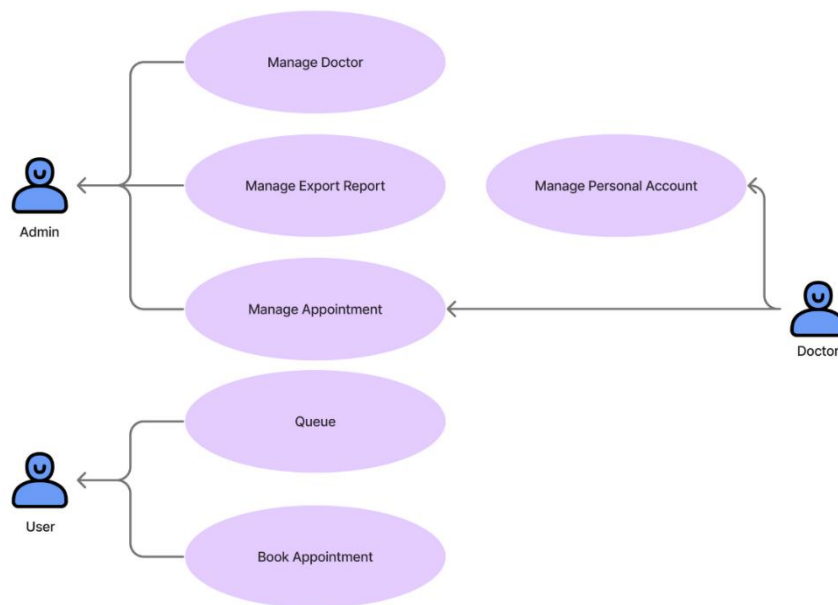Figure 6 shows the Use Case Diagram of Barangay Healthcare Management System designed to meet the requirements of administrative, admin and patient within its scope, describing the user functionality and interaction for the system's usage. The

system offers various features for admin, doctor and the system user, including the ability of admin that can manage appointments, doctors, manage all functionality of the application, and the patient they can create appointments. System users can login their account, manage their respective accounts, consult online, and track their own records online. Overall, the administration is responsible for the functionality and the growth of the system.

Project Development

As depicted in Figure 7. This research methodology follows the Agile methodology, which involves five stages of development including analyzing requirements, designing the system, developing it, testing, and evaluating it. It aims to ensure that the Development of Barangay Healthcare Management System meets the requirements and expectations of the Barangay Healthcare Management while also being efficient, secure, and easy to use. The steps to develop a Barangay Healthcare
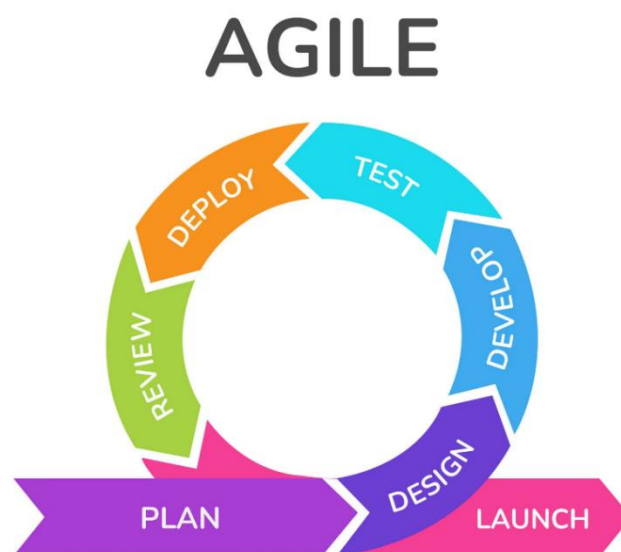
Management System using the agile model are as follows:

Figure 7. The Project Development Flow of Barangay Healthcare Management System

Requirement Analysis Phase

This phase will identify and document the specific requirements for the Barangay Healthcare Management System and Consult with healthcare professionals, administrators, and end-users, to ensure a comprehensive understanding of needs. The specifications were being collected through interviews and ongoing research of different barangay healthcare centers.

Systems Design Phase

This phase creates a detailed system design based on the gathered requirements, design the architecture, database structure, user interfaces, and any other relevant components of the system and plan for data storage, data flow, and system interactions.

Development Phase (Coding)

In this phase also known as coding, the code for the Barangay Healthcare Management System based on the design specifications, follow coding standards and best practices to ensure code quality and maintainability and last develop each module or component of the system iteratively. In this phase also known as coding, the code for the Barangay Healthcare Management System is written based on the design specifications, follow coding standards and best practices to ensure code quality and maintainability and last develop each module or component of the system iteratively.

Testing Phase

This stage involves validating whether the system is suitable for integration and scalable application. The testing procedure employs Test Case Forms that encompass each module, including operational and testing protocols. Functional testing, reliability testing, and response time testing are utilized. After ensuring the system operates without errors, the proponents conducted a set of tests with real-time users to gather their feedback, suggestions, and recommendations regarding its software development.

Deployment

This stage involves validating whether the system is suitable for integration and scalable application. The testing procedure employs Test Case Forms that encompass each module, including operational and testing protocols. Functional testing, reliability testing, and response time testing are utilized. After ensuring the system operates without errors, the proponents conducted a set of tests with real-time users to gather their feedback, suggestions, and recommendations regarding its software development.

Evaluation Phase

The last phase compromises the utilization of the ISO 25010 software quality matrix to guarantee that the system adheres to acceptable performance and integrity standards. The researchers devised a survey questionnaire for respondents to assess the acceptability of the application.

Operation and Maintenance

This is the step where the system is put into action and run on the actual environment. On the other hand, this is also the process of identifying the errors and checks the possible enhancement or changes during system operations.

Operation and Testing Procedure

Operation Procedure

The following procedures were followed to operate or use the system properly.

For the user

1. Accessed the Barangay Healthcare Management System through the website.

2. Created an appointment

3. Selected the service you need then schedule an appointment.

4. Provided the necessary information and complete the process.

5. Once the process is complete, one will receive a message or notification in email.

For the admin

1. Logged in to the Barangay Healthcare Management System using admin credentials.

2. Viewed and managed patient appointments.

3. Communicated with patients through email.

4. Performed other tasks as assigned such as exporting records, modified doctors profile.

5. Monitored system performance and troubleshoot any technical issues.

For the doctor

1. Logged in to the Barangay Healthcare Management System using your credentials.

2. Generated reports or transaction logs such as appointments.

3. Followed up the patient appointment and confirming their appearance for schedule appointments

Testing Procedure

Functionality Test. To test the system's quality, the functionality test was one of the testing procedures conducted to ensure that the system's features and performance satisfy the structures and positions of the university organizations.

1. The system should be tested regularly to ensure that it is working properly.

2. Testing should be performed by users, admin, and doctors.

3. Testing should cover all aspects of the system, including functionality, performance, security, and usability.

4. Any issues found during testing should be documented and reported to the appropriate personnel.

Reliability Test. This test was carried out to ensure that the system works as intended and does the assigned tasks during the allotted period. Live tests were carried out to ensure the dependability of the system. The subsequent actions were carried out:

1. Conducted an actual system presentation in the chosen barangay healthcare

2. Requested that the Healthcare Administrator and other system users, Healthcare Personnel and Residents to test the system's operation for a predetermined time.

3. Requested an end-users' report on any issues that came up during testing.

4. Gathered all the suggestions and criticisms from the customers.

Table 1 shows the testing procedure that was conducted on the system in terms of the accuracy

Table 1

Accuracy Testing Procedure of the Development of Barangay Healthcare Management System

Test Case	Procedure	Expected Output
Patient Appointment Accuracy	Navigate to the Patient appointment	Patient appointment accurately will be saved in the system
	Enter the patient details	

		such as name, email, barangay Id, appointment date and visit on site or online consultation	Patient will receive a notification email
		Submit the appointment	
Doctor Accuracy	**Accessibility**	Navigate to the doctor's dashboard or home screen	The details of patient appointment will be exported
		View appointment of the patient	The patient appointment will be confirmed
		Follow up the patient appointment	
		Confirming the patient appointment	
Administrative Accuracy	**Access**	Use valid administrator credentials to access the healthcare management system	The system will accurately record and save the details of new doctors, including personal information,

	contact details and specialization.
Upon Successful login, navigate to the administrator's dashboard	
	The exported file will contain all the relevant patient information, accurately reflecting the data displayed within the system
On the administrator dashboard, create doctor and fill in the required information such as doctor image, name, phone number, specialization, room, email, and password.	
Confirm the entered details and save the new doctor's profile within the system	

Table 2 shows the testing procedure that was conducted on the system in terms of functionality.

Table 2

Functionality Testing Procedure of the Development of Barangay Healthcare

Management System

Test Case	Procedure	Expected Output
Access the Web Application Through a Browser	Open a web browser Enter URL of the health care management system. Log in with valid admin credentials.	Successful login to the healthcare management system, with the admin landing on the dashboard page.
View Dashboard	Upon successful login, navigate to the admin dashboard.	The admin dashboard will display statistic related to the patients' appointments
Book an Appointment	Click on the book an appointment button. Select date and time for a new appointment. Choose the service of the appointment. Confirm the appointment	A new appointment will be successfully booked for the selected date and time, with patient details accurately recorded in the system.

	booking.	
Confirmation Message through email	After booking the appointment, check the email inbox of the patient, associated also with the doctor account and admin.	An email confirmation will be received in the admin's inbox, containing details of the newly booked patient appointment information, appointment details.
Export Data to PDF, Excel, CSV	Navigate to the Export section of the admin interface.	Downloaded file in the selected format (PDF, Excel, or CSV) will contain accurate data, such
	Choose the desired format (PDF, Excel, or CSV) for exporting data.	as patient information, appointment details, or medical records, depending on the chosen data ranges
	Download the exported file and verify its integrity	or categories.
Add Doctors	Access the Doctors section of the admin panel.	A new doctor profile will successfully created in the system, with all required
	Click on the option to add a new doctor.	details accurately saved, such as names, specialization, and contact

	Enter the required details such as name, specialization, contact information, etc.	information.
Show Appointment	Navigate back to the appointment section.	The newly booked appointments are visible in the appointment schedule, along with the other existing appointments, and all details are displayed accurately.
	Verify that the newly booked appointment is visible in the appointment schedule.	
Viewing of the table for appointment and follow up pages	Access the follow-up section.	Tables displaying appointments and follow-up are properly formatted and accessible with all relevant details such as patient name, appointment date/time, doctors name displayed accurately.
	Ensures that the table displaying follow-up visits is properly formatted and accessible.	
Confirmation of the patient's appearance	Verify that all relevant details, such as patient name, appointment date/time, and doctors	The system updates the appointment status to indicate that the patient has arrived, confirming their

	name are displayed accurately.	appearance for the scheduled appointment.

Evaluation Procedure

For evaluating the system's acceptance, respondents composed of five administrators from the selected healthcare facility, five employees also form healthcare as healthcare professionals who manage requests, five IT professional, fifteen residents were gathered. They were requested to evaluate the project's merit, value, and importance considering the criteria it served as benchmarks. The study was utilized from the ISO 25010 assessment tool, namely: functionality, efficiency, and compatibility, reliability, maintainability, portability, and usability.

1. The above-mentioned respondents were selected from this group to serve as system evaluator-respondents.

2. The researchers presented the produced system to the respondents and described the typical characteristics of the Barangay Healthcare Management System and the different modules.

3. Attempting to log in as a User, Staff, and Administrator account was requested of the evaluators. and look at the remaining System features.

4. After the project demonstration, an evaluation questionnaire was presented to the evaluator.

5. Respondents were asked to complete the questionnaire and assess the system for each criterion. The criteria are aligned using the 4-point Likert scale in according to the software's ISO 25010 quality standards.

6. Using Microsoft Excel, the information from the filled surveys was totaled to calculate the weighted means

7. The results were described qualitative using the range of scale values shown in Table 3.

Table 3. Likert Scale

Scale	Range	Adjectival Rate
4	3.4 – 4.0	Highly Acceptable
3	2.6 – 3.3	Very Acceptable
2	1.8 – 2.5	Fairly Acceptable
1	1.0 – 1.7	Not Acceptable

Chapter 4

RESULT AND DISCUSSION

This chapter contains the project description, project structure, project capabilities and limitations, and the result of evaluation for the project.

Project Description

This study developed a Barangay Healthcare Management System to establish an integrated and technologically advanced platform that enhances healthcare service delivery, promotes efficient patient management, and improves overall healthcare outcomes within the Barangay.

Project Structure

Figure 8. User Home Page

In Figure 8, the system shows the main home page of the user or the patient who visits the appointment system.

Figure 9. User Home Page – About us

In Figure 9, the system shows the information such as mission and vision of Barangay Pinagsama.
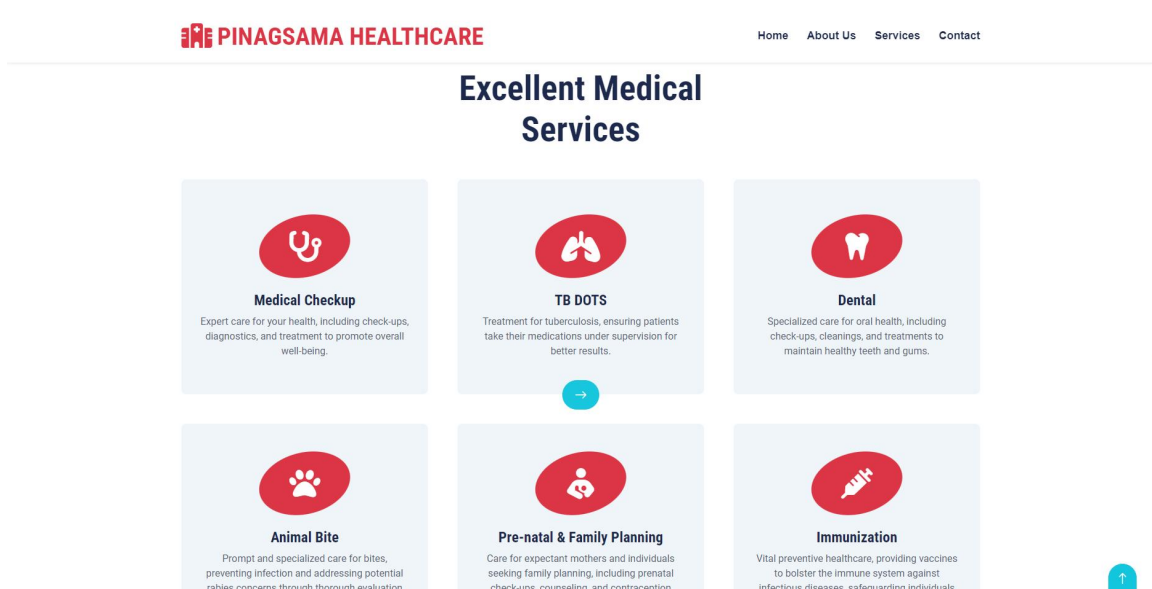

Figure 10. User Home Page- Service

In Figure 10, it shows all the services of the system, it has a medical check-up, tb dots, dental, animal bite, pre-natal & family planning and immunization.

Figure 11. User Home Page – Booking of Appointments

In Figure 11, this is the main service of the system which the user or the patient

can book an appointment either visit on site or online consolation.

Figure 12. User Home Page – Contact Details

Figure 12 shows the contact details of the Barangay Pinagsama Healthcare
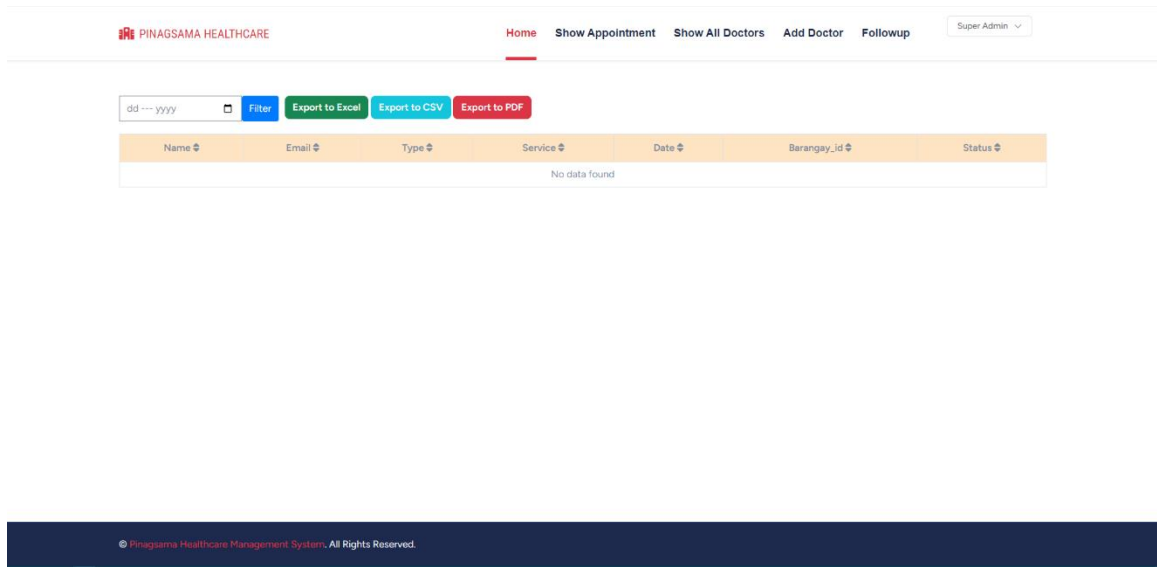
Figure 13. Admin- Home Page

In Figure 13, it shows the administrator admin side.
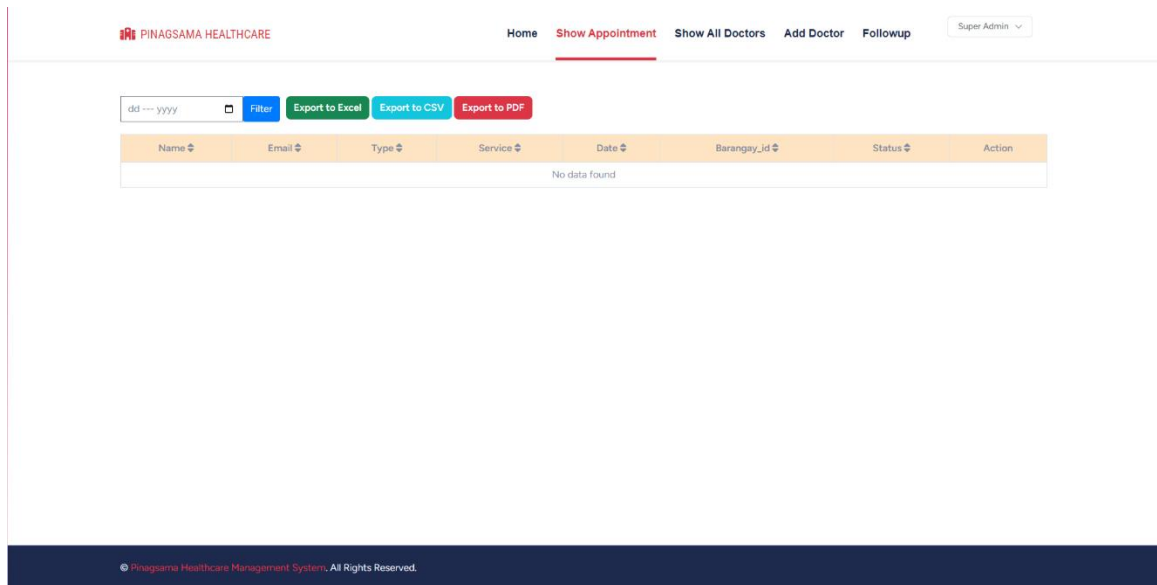
Figure 14. Admin - Appointments Page

Figure 14 shows the table for the patient's appointment.

Figure 15. Admin – Creating Doctor Account Page

In figure 15, is where the administrator can create a new doctor account.

Figure 16. Admin **–** Follow-up Page

In Figure 16, it shows all the appointments that the doctor decides to create a follow-up appointment.

Figure 17. Doctor - Appointment Page

In Figure 17, it shows how the doctors process the confirmation of the appointment.

Figure 18. Doctor - Appointment Page

Figure 18 is where the doctors allow to set a follow-up date for the patient.
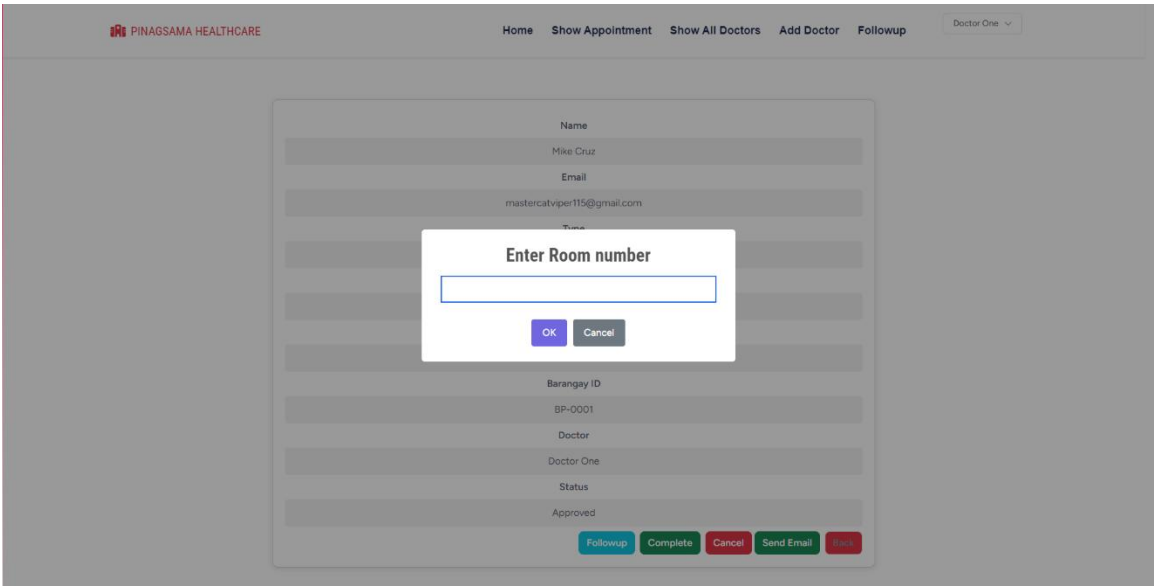
Figure 19. Doctor - Appointment Page

Figure 19, on this section the doctors enter the room of the patient.
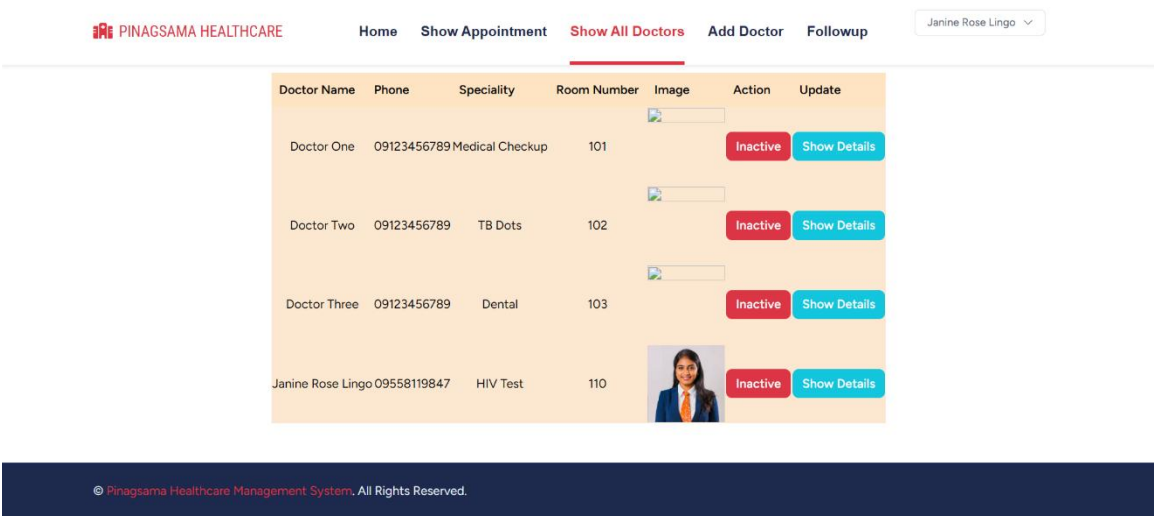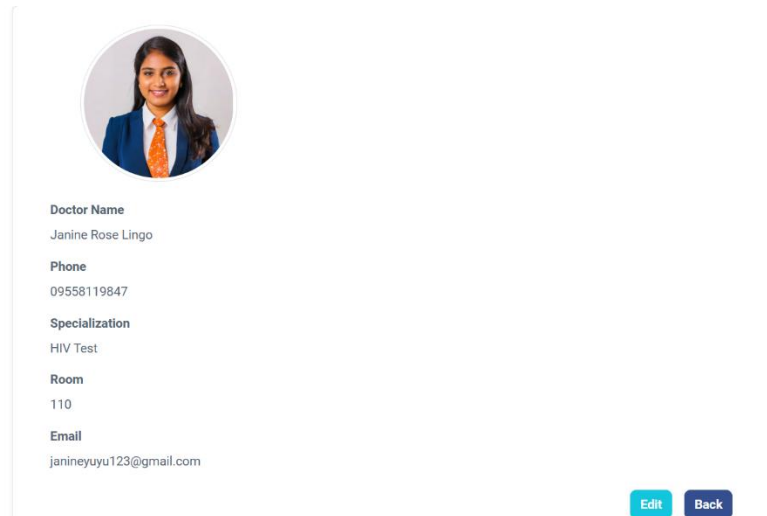
Figure 20. Doctor – Showing of All Doctors Page

In Figure 20 shows all the doctors registered in system. And it can view all of the details.

Figure 21. Doctor – Editing Doctors Information Page

Figure 21 shows the editing in the information of the doctors.

Project Capabilities and Limitations

The following are the *Capabilities* of the developed system:

1. The system can store the appointment data of the patient into a database.

2. The system can export the appointment data of the patient by PDF, CSV, and XLS File.

3. The system can book consultation of the patient for visit-on-site and online.

4. The system can add and manage doctor's profile.

5. The system can make an action such as Follow-up, Confirmation of appearance, Appointment Cancel.

The following are the *Limitations* of the developed system:

1. The system can only store data of appointment of the patient and not the health record of the patient.

2. The patient cannot cancel the appointment using the system, it can only be done through email.

3. The doctor will manually re-book as follow up the patient schedule, if she/he is not available on the said date.

4. The user' can only book an appointment and does not have a profile.

Test Result

The system was developed using PHP Language and Laravel Framework. As such, the system's web application can run on any computer desktop's web browsers. The test results on the accuracy and functionality of the developed system are presented in the tables that follow.

Table 3

Accuracy Test Results

Test Case	Procedure	Expected Output
Patient Appointment Accuracy	Navigate to the Patient appointment.	Patient appointment will be accurately saved in the system.
	Enter the patient details such as name, email, barangay Id, appointment date and visit on site or online consultation.	Patient will receive a notification email.
	Submit the appointment.	
Doctor Accessibility Accuracy	Navigate to the doctor's dashboard or home screen.	The details of patient appointment are exported.
	View appointment of the patient.	The patient appointment is confirmed.
	Follow up the patient appointment.	
	Confirming the patient	

appointment.

Administrative Access Accuracy	Use valid administrator credentials to access the healthcare management system.	The system accurately records and saves the details of new doctors, including personal information, contact details and specialization.
	Upon Successful login, navigate to the administrator's dashboard.	
		The exported file contains all the relevant patient information, accurately reflecting the data displayed within the system.
	On the administrator dashboard, create doctor and fill in the required information such as doctor image, name, phone number, specialization, room, email, and password.	
	Confirm the entered details and save the new doctor's profile within the system	

Table 4

Functionality Test Results

Test Case	Procedure	Expected Output
Access the Web Application Through a Browser	Open a web browser Enter URL of the health care management system. Log in with valid admin credentials.	Successful login to the healthcare management system, with the admin landing on the dashboard page.
View Dashboard	Upon successful login, navigate to the admin dashboard.	The admin dashboard displays statistic related to the patients' appointments
Book an Appointment	Click on the book an appointment button. Select date and time for a new appointment. Choose the service of the appointment.	A new appointment is successfully booked for the selected date and time, with patient details accurately recorded in the system.

	Confirm the appointment booking.	
Confirmation Message through email	After booking the appointment, check the email inbox of the patient, associated also with the doctor account and admin.	An email confirmation is received in the admin's inbox, containing details of the newly booked patient appointment information, appointment details.
Export Data to PDF, Excel, CSV	Navigate to the Export section of the admin interface. Choose the desired format (PDF, Excel, or CSV) for exporting data. Download the exported file and verify its integrity.	Downloaded file in the selected format (PDF, Excel, or CSV) contains accurate data, such as patient information, appointment details, or medical records, depending on the chosen data ranges or categories.
Add Doctors	Access the Doctors section of the admin panel. Click on the option to add a new doctor.	A new doctor profile is successfully created in the system, with all required details accurately saved, such as names,

		specialization, and contact information.
	Enter the required details such as name, specialization, contact information, and so on.	
Show Appointment	Navigate back to the appointment section.	The newly booked appointments are visible in the appointment schedule, along with the other existing appointments, and all details are displayed accurately.
	Verify that the newly booked appointment is visible in the appointment schedule.	
Viewing of the table for appointment and follow up pages	Access the follow-up section.	Tables displaying appointments and follow-up are properly formatted and accessible with all relevant details such as patient name, appointment date/time, doctors name displayed accurately.
	Ensures that the table displaying follow-up visits is properly formatted and accessible.	
Confirmation of the patient's appearance	Verify that all relevant details, such as patient name, appointment	The system updates the appointment status to indicate that the patient has

	date/time, and doctors name are displayed accurately.	arrived, confirming his/her appearance for the scheduled appointment.

Evaluation Result

The system was evaluated to determine its level of acceptability. The respondents consisted of purposively selected IT professionals, Healthcare professionals, Barangay Officials, Brgy. Pinagsama residents. Seven tables show the summary of evaluation results.

Table 5

Functional Suitability Result

Functional Suitability		
Indicators	**Weighted Mean**	**Description**
1. Functional Completeness	2.43	Fairly Acceptable
2. Functional Correctness	2.56	Acceptable
3. Functional Appropriateness	2.43	Fairly Acceptable
Criterion Weighted Mean	*2.47*	*Fairly Acceptable*

As seen in Table 5, the system obtains its fair degree under "Functional Suitability" with an overall weighted mean of 2.47 described as "Faily Acceptable". This

result indicates that the performance of the program functions fairly as tested by the evaluators.

Table 6

Performance Efficiency Result

Performance Efficiency		
Indicators	**Weighted Mean**	**Description**
1. Time Behavior	2.40	Fairly Acceptable
2. Resource Utilization	2.53	Acceptable
Criterion Weighted Mean	*2.46*	*Fairly Acceptable*

Table 6 shows that the system obtains its fair degree under "Performance Efficiency" with an overall weighted mean of 2.46 described as "Faily Acceptable". This result indicates that the performance of the program functions fairly as tested by the evaluators.

Table 7

Compatibility Result

Performance Efficiency

Indicators	Weighted Mean	Description
1. Co-existence	2.53	Acceptable
2. Interoperability	2.53	Acceptable
Criterion Weighted Mean	*2.53*	*Acceptable*

Table 7 presents the result data of the system that obtains its fair degree under "Compatibility" with an overall weighted mean of 2.53 described as "Acceptable". This result indicates that the performance of the program functions satisfied the evaluators.

Table 8

Usability Result

Performance Efficiency		
Indicators	**Weighted Mean**	**Description**
1. Appropriateness	2.76	Very Acceptable
2. Learnability	2.93	Very Acceptable
3. Operability	2.60	Very Acceptable
4. User Error Protection	2.56	Very Acceptable

5. User Interface Aesthetics	2.96	Very Acceptable
6. Accessibility	2.67	Very Acceptable
Criterion Weighted Mean	*2.74*	*Very Acceptable*

Table 8 presents the result data of the system that obtains its highest rating under "Usability" with an overall weighted mean of 2.74 described as "Very Acceptable". This result indicates that the performance of the program functions satisfied by the evaluators.

Table 9

Reliability Result

Performance Efficiency		
Indicators	**Weighted Mean**	**Description**
1. Availability	2.80	Very Acceptable
2. Fault Tolerance	2.43	Fairly Acceptable
Criterion Weighted Mean	*2.61*	*Very Acceptable*

Table 9 presents the result data of the system that meets the very acceptable degree under "Reliability" with an overall weighted mean of 2.61 described as "Very

Acceptable". This result indicates that the performance of the program functions satisfied the evaluators.

Table 10

Maintainability Result

Performance Efficiency		
Indicators	**Weighted Mean**	**Description**
1. Analyzability	2.50	Fairly Acceptable
2. Modifiability	2.43	Fairly Acceptable
3. Testability	2.61	Very Acceptable
Criterion Weighted Mean	*2.51*	*Acceptable*

Table 10 presents the result data of the system that obtains its fair degree under "Maintainability" with an overall weighted mean of 2.51 described as "Acceptable". This result indicates that the performance of the program functions satisfied the evaluators.

Table 11

Portability Result

Performance Efficiency		
Indicators	**Weighted Mean**	**Description**
1. Instability	2.47	Fairly Acceptable
Criterion Weighted Mean	*2.47*	*Fairly Acceptable*

Table 11 presents the result data of the system that obtains its fair degree under "Compatibility" with the weighted mean of 2.47 described as "Faily Acceptable". This result indicated that the performance of the program functions fairly as tested by the evaluators.

Table 12

Overall Result

Performance Efficiency		
Indicators	**Weighted Mean**	**Description**
1. Functional Suitability	2.47	Fairly Acceptable
2. Performance Efficiency	2.46	Fairly Acceptable
3. Compatibility	2.53	Acceptable
4. Usability	2.74	Very Acceptable
5. Reliability	2.61	Very Acceptable
6. Maintainability	2.51	Acceptable
7. Portability	2.47	Fairly Acceptable
Grand Weighted Mean	*2.54*	*Acceptable*

Table 12 presents overall result data of the system evaluation. The performance of the program was measured in the terms of Functional Suitability, Performance Efficiency, Compatibility, Usability, Reliability, Maintainability, and Portability. All the major indicators were rated as "Acceptable". The grand weighted mean score of 2.54 implies that the respondents perceived that the system was acceptable.

Chapter 5

SUMMARY OF FINDINGS, CONCLUSION AND RECCOMENDATION

This chapter presents the summary of findings, the conclusions drawn from the findings, and the corresponding recommendations for further improvement of the project

Summary of Findings

The evaluation of the Barangay Healthcare system in the Barangay was conducted to assess its merit, value and importance. This study was conducted to establish an integrated and technologically advanced platform that enhances healthcare service delivery, promotes efficient patient management, and improves overall healthcare outcomes within the Barangay. The study adapted the ISO 25010 assessment tool, focusing on the seven key criteria: functionality, efficiency, compatibility, reliability, portability, maintainability and usability. The testing involved a total of (30) respondents composed of (5) IT Professionals, (5) employees also from healthcare as healthcare professionals who manage requests, (5) administrators or the barangay healthcare officials and (15) residents of barangay. The findings showed that the system enhances administrative operation, healthcare importance and user experience. It generates well with existing tools reliable and easy to maintain. The system's user-friendly interface received positive feedback, highlighting its intuitive design, The result showed that the healthcare system significantly improves efficiency and satisfaction across all other user categories. It was rated as "Acceptable" with a grand weighted mean of 2.54. This proves that the system in convenient and can be implemented.

Conclusions

The following conclusions were derived from the findings of the study:

1. The developed system provides the following features:

a. The system can book an appointment consultation for the patient either visit on-site or through online

b. The system can store patient appointment information within the database

b. The system can export appointments data of the patient such as PDF, CSV and XLS file.

c. Doctors profile can be added or edit and managed within the system

d. The system enables various actions such as follow-up and confirmation of attendance

2. The Barangay Healthcare Management System was successfully developed using a.) PHP (Programming Language, Figma((UI/UX) design, HTML (Programming Language), CSS (Programming Language), JavaScript (Programming Language), MySQL (Database), Laravel (Framework), Visual Studio Code (IDE).

3. The test result showed that the system is accurate and met its expected functionalities in creating or booking an appointment in a healthcare barangay.

4, The developed web application was evaluated as acceptable in terms of functionality, efficiency, compatibility, reliability, portability, maintainability and usability which proves that the system can be very helpful to the Barangay Pinagsama Healthcare.

Recommendations

The Following recommendations are put forward for further improvement of the developed system.

1. Implement a secure registration system that personalized access to the healthcare services for the user or the patients.

2. Deletion of approved appointment status on the system.

3. Implement a fully booked notification to enhanced user satisfaction and to prevent the scheduling conflicts.

4. Improve the layout and design of the appointment's reports to make them visually appealing.

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APPENDIX A

Evaluation Instrument

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Evaluation Instrument for

Development of Barangay Healthcare Management System

Name:

Respondent's Category: ☐LGU Volunteers   ☐IT Professional   ☐Barangay Pinagsama Resident

Instruction: This evaluation sheet will be used to analyze and improve the presented system. Kindly answer the following questions by placing a check(✔) under the corresponding numerical rating

Numerical Rating	Equivalent
1	Not Acceptable
2	Fairly Acceptable
3	Very Acceptable
4	Highly Acceptable

Criteria	Rating			
	4	3	2	1
A. Functional Suitability				
1. Functional Completeness				
2. Functional Correctness				
3. Functional Appropriateness				
B. Performance Efficiency				
1. Time Behaviour				
2. Resource Utilization				
C. Compatibility				
1. Co-existence				
2. Interoperability				
D. Usability				
1. Appropriateness				
2. Learnability				
3. Operability				
4. User Error Protection				
5. User Interface Aesthetics				
6. Accessibility				
E. Reliability				
1. Availability				
2. Fault Tolerance				
F. Maintainability				
1. Analyzability				
2. Modifiability				
3. Testability				
G. Portability				
1. Instability				

APPENDIX B

Sample Answered Evaluation Sheet

Barangay Management Health Care – Evaluation Form

Informed Consent

We are **fourth-year students** of **Technological University of the Philippines - Manila** under the **Bachelor of Science in Information Technology**. In partial fulfillment of the course IT Capstone & Research II with the supervision of Mr. Francis A. Alfaro, we are conducting a thesis deployment of a web-based system entitled "*LGU Management Health Care*". This scale aims to measure the functionality, accuracy, efficiency, usability, reliability, maintainability, and portability of the said web-based system.

This evaluation will involve your participation in accomplishing a survey in the form of a Likert Scale. This will take at least 5-15 minutes of your time. However, your participation in this study is completely voluntary. Please answer the questions honestly, accurately, and completely. You can withdraw from the study at any time, for any reason, if you decide. If you wish to terminate participation, please inform the researchers immediately, so that the responses can be separated right at that point.

All information obtained from the study will be preserved and kept private in order to protect each respondent's answers. Only when discussing or evaluating the data will further identifying information be used. The researchers' files and data will be kept in a secure drive and folders. It shall be kept private in accordance with Republic Act No. 10173, often known as the Data Privacy Act of 2012. You may rest assured that your responses will be kept private and used just for academic and research reasons and is only accessible by the researchers of the study.

Do you Agree? *

◉ Yes

Name (Last Name, First Name, M.I) *

Banes, Sharmie, C.

Category *

◯ IT Professional

◯ LGU Volunteers

◯ Barangay Officials

◉ Barangay Pinagsamahan Resident

Functional Suitability

Measures the Functional Completeness, Correctness, and Appropriateness of the System
1 - Not Acceptable
2 - Fairly Acceptable
3 - Very Acceptable
4 - Highly Acceptable

Functional Completeness *

	1	2	3	4	
Not Acceptable	◯	◯	◉	◯	Highly Acceptable

Functional Correctness *

	1	2	3	4	
Not Acceptable	◯	◯	◉	◯	Highly Acceptable

Functional Appropriateness *

	1	2	3	4	
Not Acceptable	◯	◯	◉	◯	Highly Acceptable

Performance Efficiency

Measures the Performance Efficiency by Time Behavior and Resource Utilization
1 - Not Acceptable
2 - Fairly Acceptable
3 - Very Acceptable
4 - Highly Acceptable

Time Behavior *

	1	2	3	4	
Not Acceptable	○	◉	○	○	Highly Acceptable

Resource Utilization *

	1	2	3	4	
Not Acceptable	○	○	◉	○	Highly Acceptable

Compatibility

Measures the Compatibility by Co-Existence and Interoperability
1 - Not Acceptable
2 - Fairly Acceptable
3 - Very Acceptable
4 - Highly Acceptable

Co-existence *

	1	2	3	4	
Not Acceptable	○	○	◉	○	Highly Acceptable

Interoperability *

	1	2	3	4	
Not Acceptable	○	○	◉	○	Highly Acceptable

Usability

Measures the Usability using the Likert Scale
1 - Not Acceptable
2 - Fairly Acceptable

Appropriateness Recognizable *

	1	2	3	4	
Not Acceptable	○	◉	○	○	Highly Acceptable

Learnability *

	1	2	3	4	
Not Acceptable	○	◉	○	○	Highly Acceptable

Operability *

	1	2	3	4	
Not Acceptable	○	○	◉	○	Highly Acceptable

User Error Protection *

	1	2	3	4	
Not Acceptable	○	◉	○	○	Highly Acceptable

User Interface Aesthetics *

	1	2	3	4	
Not Acceptable	○	○	○	◉	Highly Acceptable

Accessibility *

	1	2	3	4	
Not Acceptable	○	○	◉	○	Highly Acceptable

Reliability

Measures the Reliability using the Likert Scale
1 - Not Acceptable
2 - Fairly Acceptable
3 - Very Acceptable
4 - Highly Acceptable

Availability *

	1	2	3	4	
Not Acceptable	○	○	◉	○	Highly Acceptable

Fault Tolerance *

	1	2	3	4	
Not Acceptable	○	◉	○	○	Highly Acceptable

Maintainability

Measures the Maintainability using the Likert Scale
1 - Not Acceptable
2 - Fairly Acceptable
3 - Very Acceptable
4 - Highly Acceptable

Analyzability *

	1	2	3	4	
Not Acceptable	○	◉	○	○	Highly Acceptable

Modifiability *

	1	2	3	4	
Not Acceptable	○	○	◉	○	Highly Acceptable

Testability *

	1	2	3	4	
Not Acceptable	○	◉	○	○	Highly Acceptable

Portability

Measures the Portability using the Likert Scale
1 - Not Acceptable
2 - Fairly Acceptable
3 - Very Acceptable
4 - Highly Acceptable

Instability *

	1	2	3	4	
Not Acceptable	○	◉	○	○	Highly Acceptable

APPENDIX C

Summarry

	Functional Completeness	Functional Correctness	Functional Appropriateness	Time Behavior	Resource Utilization	Co-existence	Interoperability	Appropriateness Recogn	Learnability	Operability
2 shar	3	3	3	2	3	3	3	2	2	3
3	4	3	3	4	3	3	2	2	3	3
4	2	3	3	2	2	2	3	3	3	2
5	2	3	3	3	3	3	3	3	3	3
6	3	1	3	2	2	1	2	3	4	3
7	3	2	3	3	3	4	3	4	3	4
8 shar	2	2	2	2	2	2	2	3	3	3
9	3	3	3	3	3	3	3	3	3	3
10 shar	2	2	2	1	1	3	2	4	4	1
11	3	3	3	3	3	2	3	3	2	2
12 shar	1	1	1	1	1	1	1	1	1	1
13	3	3	3	3	3	3	3	3	3	3
14 shar	2	3	2	3	2	2	2	3	3	3
15 shar	2	2	2	2	3	3	4	3	4	2
16 shar	1	2	1	1	3	3	2	2	2	3
17	3	3	3	3	3	3	3	3	3	3
18	2	3	3	3	3	3	3	2	4	3
19	2	3	2	2	3	2	3	2	3	2
20	3	2	3	2	3	1	2	2	2	2
21 shar	2	3	2	2	3	3	2	2	3	2
22	3	3	2	3	2	2	3	3	2	3
23 shar	2	3	2	3	2	3	3	4	4	3
24	3	3	3	3	3	2	3	3	3	3
25 shar	2	3	2	2	3	3	3	3	2	2
26 shar	2	2	3	3	2	3	2	3	4	3
27	2	2	1	1	1	2	2	2	3	2
28 shar	3	3	2	3	3	2	2	3	4	3
29 shar	2	3	2	2	2	3	2	3	3	2
30 shar	3	3	3	3	3	3	3	3	2	2
31 shar	3	3	3	2	3	3	2	3	3	3
32	2.43	2.57	2.43	2.40	2.53	2.53	2.53	2.77	2.93	2.60

User Error Protection	User Interface Aesthetics	Accessibility	Availability	Fault Tolerance	Analyzability	Modifiability	Testability	Instability
2	4	3	3	2	2	3	2	2
3	3	3	3	3	3	3	3	3
2	3	1	3	3	2	2	3	3
2	3	3	3	2	3	2	3	3
2	4	3	2	2	3	3	3	3
3	2	3	3	2	3	3	3	3
4	4	3	3	2	2	2	3	2
3	3	3	3	2	3	2	3	3
3	4	2	3	2	2	2	3	2
3	4	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1
3	3	3	3	3	3	2	3	3
3	3	3	4	3	4	2	2	3
2	1	2	2	2	3	4	4	2
3	3	3	3	3	3	3	3	3
3	2	2	3	3	2	2	3	3
2	2	3	2	2	3	2	3	2
3	3	2	3	3	2	3	3	3
2	4	3	3	2	3	3	3	2
2	3	2	3	3	2	3	2	2
3	4	3	4	3	3	3	2	2
3	4	3	2	2	2	2	2	2
2	3	3	2	2	3	3	3	2
2	4	3	4	3	2	3	3	3
2	1	3	2	2	1	2	2	2
3	4	3	3	3	2	3	2	3
2	2	2	3	3	2	3	3	2
3	3	3	2	2	3	3	2	3
3	2	3	3	3	3	3	3	
2.57	2.97	2.67	2.80	2.43	2.50	2.57	2.70	2.48

APPENDIX D

Test Cases for Functional Suitability

Test Case	Procedure	Expected Output
Patient Appointment Accuracy	Navigate to the Patient appointment	Patient appointment accurately saved in the system
	Enter the patient details such as name, email, barangay Id, appointment date and visit on site or online consultation	Patient received a notification email
	Submit the appointment	
Doctor Accessibility Accuracy	Navigate to the doctor's dashboard or home screen	Exporting the details patient appointment
	View appointment of the patient	Confirming the patient appointment
	Follow up the patient appointment	

		Confirming the patient appointment	
Administrative Accuracy	**Access**	Use valid administrator credentials to access the healthcare management system	The system accurately records and saves the details of new doctors, including personal information, contact details and specialization.
		Upon Successful login, navigate to the administrator's dashboard	The exported file contains all the relevant patient information, accurately reflecting the data displayed within the system
		On the administrator dashboard, create doctor and fill in the required information such as doctor image, name, phone number, specialization, room, email, and password.	
		Confirm the entered details and save the new doctor's	

	profile within the system	

Status:	PASSED

Test Case	Procedure	Expected Output
Access the Web Application Through a Browser	Open a web browser Enter URL of the health care management system. Log in with valid admin credentials.	Successful login to the healthcare management system, with the admin landing on the dashboard page.
View Dashboard	Upon successful login, navigate to the admin dashboard.	The admin dashboard displays statistic related to the patients' appointments
Book an Appointment	Click on the book an appointment button. Select date and time for a new appointment.	A new appointment is successfully booked for the selected date and time, with patient details accurately recorded in the

		system.
	Choose the service of the appointment.	
	Confirm the appointment booking.	
Confirmation Message through email	After booking the appointment, check the email inbox of the patient, associated also with the doctor account and admin.	An email confirmation is received in the admin's inbox, containing details of the newly booked patient appointment information, appointment details.
Export Data to PDF, Excel, CSV	Navigate to the Export section of the admin interface.	Downloaded file in the selected format (PDF, Excel, or CSV) contains accurate data, such as
	Choose the desired format (PDF, Excel, or CSV) for exporting data.	patient information, appointment details, or medical records, depending on the chosen data ranges
	Download the exported file and verify its integrity	or categories.
Add Doctors	Access the Doctors section	A new doctor profile is

	of the admin panel.	successfully created in the system, with all required
	Click on the option to add a new doctor.	details accurately saved, such as names, specialization, and contact
	Enter the required details such as name, specialization, contact information, etc.	information.
Show Appointment	Navigate back to the appointment section.	The newly booked appointments are visible in the appointment schedule,
	Verify that the newly booked appointment is visible in the appointment schedule.	along with the other existing appointments, and all details are displayed accurately.
Viewing of the table for appointment and follow up pages	Access the follow-up section.	Tables displaying appointments and follow-up are properly formatted
	Ensures that the table displaying follow-up visits is properly formatted and accessible.	and accessible with all relevant details such as patient name, appointment date/time, doctors name

		displayed accurately.
Confirmation of the patient's appearance	Verify that all relevant details, such as patient name, appointment date/time, and doctors name are displayed accurately.	The system updates the appointment status to indicate that the patient has arrived, confirming their appearance for the scheduled appointment.
Status:	PASSED	

RESEARCHERS' PROFILE

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