REDVAULT: VOLUNTEER MANAGEMENT SYSTEM USING A BLOCKCHAIN MEDICAL DATA ENCRYPTION ALGORITHM FOR BAGANI COMMUNITY CENTER IN BACOLOD CITY

A Capstone Project
Presented to the Faculty of the
Information and Communications Technology Program
STI West Negros University

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

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ENDORSEMENT FORM FOR PRE-ORAL DEFENSE

TITLE OF CAPSTONE RESEARCH: REDVAULT: VOLUNTEER MANAGEMENT SYSTEM USING A BLOCKCHAIN MEDICAL DATA ENCRYPTION ALGORITHM FOR BAGANI COMMUNITY CENTER IN BACOLOD CITY

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for the degree Bachelor of Science in Information Technology
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ABSTRACT

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Degree: **Bachelor of Science in Information Technology**

Date of Completion: on going

Keywords: *Blockchain, HTS forms, Encyption, Decryption, words*

Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format. Abstract here, samples are when citing an literature, an abstract of the literatures are provided. Replace the content but follow the given format.

ACKNOWLEDGEMENT

The researchers would like to extend their heartfelt gratitude to the individuals and groups who contributed to the successful completion of this capstone project.

Replace this are and extend your acknowledgements towards the academic. Faculty, adviser, teacher, mentors. 2nd paragraph will be towards your panelist or direct part of the capstone project assessment. 3rd would be your moral support, family, friends, group members, but including the name of your girlfriend / boyfriend with a relationship of 2 weeks is not recommended.

The researchers are equally grateful to the Capstone Project Review Panel for their thorough evaluation and suggestions, which greatly improved the overall quality of the work. Sincere appreciation is extended to the faculty members who provided additional insights and expertise, helping strengthen the project's foundations.

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CHAPTER I
INTRODUCTION

Blockchains can be used to make data in any industry immutable—meaning it cannot be altered. Since a block can't be changed, the only trust needed is at the point where a user or program enters data. This reduces the need for trusted third parties, such as auditors or other humans, who add costs and can make mistakes (Hayes, 2025). This unchangeable feature creates a clear and trustworthy record of all actions taken, which is especially important for systems that deal with sensitive information, like medical data.

Electronic health record (EHR) systems and hospital information systems (HISs) are widely used across the world. However, the current HISs are mainly cloud based, are stored by one particular data contractor, and have several disadvantages, such as a lack of sufficient security measures. This has led to innumerable breaches of data, as well as issues of data validity and data sharing, which have left patients exposed to economic threats and possible social stigma. Taking these issues into consideration, an improved tamperproof and hackproof database management system is much needed to replace the current system that has been used for the past several decades (Elangovan et al., 2022). Similarly, the Bagani Community Center in Bacolod City acknowledges the urgent need for a more secure and organized system to manage sensitive medical data related to HIV testing.

Leveraging blockchain technology in this study offers a promising solution. With its decentralized, tamper-proof nature, blockchain allows sensitive information to be stored and shared in a way that ensures only authorized personnel can access it. By implementing RedVault: A Volunteer Management System Using a Blockchain Medical Data Encryption Algorithm, the Bagani Community Center in Bacolod City can improve the data security of medical information. This system is designed to safeguard client information while supporting the day-to-day operations of community health workers and volunteers. Through RedVault, personal health data including HIV Testing Services form can be encrypted and stored securely, minimizing the risk of leaks or unauthorized access.

Project Context

RedVault, a solution that focuses on blockchain-based management system, was developed to meet the needs of the Bagani Community Center in Bacolod City, improving the coordinating system for volunteers and managing sensitive medical data around HIV tests. The system employs blockchain technology such that personal health information is encrypted and can only be decrypted by authorized personnel, making the most critical aspect of security for any healthcare-related environment. Apart from protecting client confidentiality, this unique feature simplifies the submission of and management for the HIV Testing Services (HTS) forms.

The Bagani Community Center's volunteers, staff, and clients benefit immensely from RedVault. Volunteers can manage their schedules and tasks with ease, then the staff can coordinate activities and get real-time updates from anywhere. Clients are facilitated through better communication with the center and are able to access important information about the services offered. The system's effectiveness very much depends on the strength of an internet connection and the availability of compatible devices, which are essential for its operation.

In general, RedVault exists to improve the flow at the Bagani Community Center; this improved flow increases the potential of addressing the health needs of those who are at risk of HIV By enabling a safe and accessible network for storing medical data, RedVault does more than just streamline operations – it builds connected, informed communities.

Purpose and Description

The proponents come up with the study of RedVault to create a platform where blockchain technology is utilized for secured flexible sharing and transfer of medical data across distant branches, all facilitated through computerized systems. After learning the need for efficient collaboration and streamlined medical data management in HIV testing centers, the proponents implemented RedVault as a solution to this real-world challenges faced by the volunteers and staff among different HIV testing centers of the Bagani. The platform will utilize the blockchain technology for secure handling of HIV Testing Services

(HTS) forms. Proponents leverage blockchain technology in this study due to its ability to address critical challenges in medical data management, such as security, transparency, and efficiency which aligns with the goal of RedVault to secure the stored sensitive information. By implementing this solution, healthcare centers can optimize operations and ensure secure, transaparent data manaagement.

Definition of terms

Throughout the study, various terms are used that may need clarification for better understanding. To ensure that the readers interpret these terms as intended by the proponents, the following terms were defined operationally:

Back-end: In this study, the back-end refers to the part of the system that works behind the scenes. It handles storing data, processing user requests, and making sure everything in the system runs smoothly, even if users don't see it directly.

Blockchain: As used in this study, blockchain is a technology that is decentralized, distributed ledger that stores the record of ownership of digital assets. Any data stored on blockchain is unable to be modified, making the technology a legitimate disruptor for industries like payments, cybersecurity and healthcare.

Client: This refers to the individuals that avails to the services provided by the Bagani Community Center.

Express.js: refers to the minimal and flexible Node.js web application framework used to build the backend of the RedVault volunteer management system. It is utilized to create and manage RESTful API routes, handle HTTP requests and responses, and organize middleware for efficient server-side logic execution.

Front-end: In this study, the frontend refers to the part of the system that users see and interact with. It includes the design, layout, buttons, and other elements that appear on the screen when using the website or application.

JavaScript: This is reffered as a dynamic programming language used to create interactive web pages by manipulating HTML and CSS in real time.

MySQL: This refers to the relational database management system (RDBMS) used to store, manage, and retrieve structured data within the RedVault volunteer management system.

Next.js: This is referred as a tool used to build the website or system. It helps create fast, well-organized, and easy-to-use web pages. It also allows the system to load content quickly and work smoothly for users.

Node.js: This refers to the open-source, server-side JavaScript runtime environment used to develop the backend of the RedVault volunteer management system.

Staff: They are the personnel working at the Bagani Community Center. They act as the admin of the platform and they are the ones who have access to the encrypted image of HTS forms sent and shared by the volunteers. They also manage schedules, organize events, and coordinate activities with volunteers through RedVault.

Tailwind CSS: This is referred as a tool for rapid UI development, allowing students to create responsive and visually appealing web interfaces without extensive custom styling.

Volunteer: These are individuals who dedicate their time and effort to support the operations and activities of the Bagani Community Center. They play a vital role in assisting staff with tasks such as event coordination, client engagement, and community outreach. They are also responsible for sending the HTS form to the staff.

React.js: This is referred as a tool used to build the front-end or user interface of the system. It helps create web pages that are fast, interactive, and easy to update without reloading the whole page.

Objectives of the Study

The general objective of this project is to develop a platform that works on both web and mobile which can provide timely updates and secure handling of medical data for clients, staff and volunteers of Bagani Community Center through integration of blockchain technology.

The following are the specific objectives of the study.

1. To create a web-based platform for clients and personnel of Bagani Community Center.

2. To design a mobile version of the application, making it flexible for mobile users.

3. To integrate blockchain technology for safe handling of personal and medical data.

4. To add notifications that alert users of timely updates and reminders.

5. To implement a module that allows management of events of the Bagani Community Center.

Significance of the Study

The capstone project has been able to simplify procedures and harness digital technologies as a result of its discoveries, allowing us to work smarter and achieve more. The following are deemed to benefit from this project study by leveraging the power of technology, this research study has played a critical role in improving the overall efficiency of our institution. The following are deemed to benefit from this research study.

STI West Negros University IT Students: This study provides them the understanding of the critical challenges in healthcare especially in HIV testing centers. The study refine the students' technical skills in system design and blockchain implementation.

Bagani Community Center Volunteers: This study provides a platform that allows secure submission of clients' HTS forms. The study helps the volunteers to focus on their responsibilities without worrying about data privacy issues of the clients.

Bagani Community Center Staff: The study provides a platform that centralize processes of information and centralizing its database for them to have an easy way of checking and operating schedules or activities from anywhere.

Bagani Community Center Client: The study povides a platform which allows them to have acces in viweing important updates, announcements, and activities related to the Bagani Community Center in Bacolod City through the platform's landing page.The study provides the clients to find clear instructions on how to apply as volunteers, with the steps conveniently displayed on the same page.

Future Researchers: This study serves as a future reference to students and researchers who would like to study and develop a blockchain system in healthcare industry.

Scope and Limitation

This study focuses on the development and implementation of RedVault, a blockchain integrated management system designed specifically for the Bagani Community Center in Bacolod City. The system leverages blockchain technology to strengthen the security of HIV Testing Services forms submitted by the volunteers. The target users of the system include the Bagani Community Center staff, registered volunteers, and their clients.

The application offers key features such as submitting and approving HTS forms, managing volunteer schedules, tracking volunteer hours, organizing events, sharing announcements and a secure encryption system that uses blockchain technology to keep sensitive information safe. Both staff and volunteers have their own dashboards that provide real-time updates to keep everyone informed and connected.

Other possible blockchain applications in healthcare, such as medical billing and payments and treatment tracking is not covered by the system. Furthermore, the system's performance relies on the availability of stable internet connection and the use of compatible devices, which may limit its functionality in areas with poor network infrastructure or older hardware.

Specific functionalities

Declaration of scope and limitation for the specific functionalities.

Note: additional information and a breakdown of scope and limitation is recommended to justify the areas of your study.

REVIEW OF RELATED LITERATURE AND STUDY

This chapter discusses the literature and studies, concepts, and ideas, generalization or conclusions and various developments related to the study.

Review Related Literature

The Potential Application of Blockchain Technology in HIV Research, Clinical Practice, and Community Settings

In response to the HIV/AIDS epidemic, stakeholders such as clinicians, community advocates, and researchers have utilized various forms of technology to mitigate the crisis. Blockchain is a nascent technology that has roots in cryptocurrency and its features are well suited for work in HIV. These features, especially the ability to securely transmit information and interactions, make it a potentially useful tool to integrate into research and practice related to stigmatized diseases, such as HIV, which require methods of maintaining high security and confidentiality (Garett & Young, 2021).

Garret and Young highlight the potential of integrating blockchain technology into HIV-related research due to its capability to securely transmit sensitive information. In relation to RedVault, this aligns well with the system's goal of ensuring the secure handling of medical data. This also suggests that implementing blockchain within RedVault is both feasible and appropriate.

Overview of Blockchain

Companies can use blockchain to record product status at each stage of production. Blockchain makes it possible to trace each product to its source. Blockchain allows the company see where each piece of product comes from, each processing and storage step in the supply chain, and the products sell-by date. In case of a product recall, the company can also see which batches are affected and who bought them (Gaikwad, 2020).

Gaikwad emphisizes that blockhain is also applicable in companies to trace every stage in a product's journey, RedVault serves a similar purpose but focuses on safeguarding and organizing sensitive medical information instead of supply chain tracking. RedVault uses blockchain for tracing and securing medical data. Instead of recording the origin and processing of products, it records encrypted medical data for the volunteer management system in the Bagani Community Center.

Blockchain-Driven Image Encryption Process with Arithmetic Optimization Algorithm for Security in Emerging Virtual Environments

With the increased utilization of virtual reality and augmented reality in several industrial sectors, such as healthcare, education, and entertainment, the requirement of confidentiality in the context of sensitive images has become important. Encryption ensures that only authorized users have access to the images, defending the confidentiality of the data. It also ensures that the images remain unaltered during storage or transmission. This helps to maintain the data integrity of the images and ensures that they are reliable and trustworthy. Therefore, an image encryption technique with BC can be used to accomplish enhanced security (Alohali et al., 2023).

The concept of a Blockchain-Driven Image Encryption Process relates to the study of the researchers, RedVault, as both emphasize the importance of security and confidentiality when managing sensitive data. In the case of virtual and augmented reality in industrial sectors, image encryption ensures that only authorized users can access the images, protecting their accuracy and reliability while being saved or shared. Similarly to the study of RedVault, blockchain encryption secures sensitive medical data, ensuring that volunteer information at the Bagani Community Center is only accessible to authorized individuals. Just as image encryption protects privacy and stop unauthorized changes, RedVault uses blockchain to protect the reliability and trustworthiness of medical records. Both methods improve data protection by using blockchain to build a strong and secure system.

Imagechain---Application of Blockchain Technology for Images

It is possible to found a blockchain-based medical image system in which images are encrypted and may be retrieved with smart contracts. Some efforts have been made to place images in the interplanetary file system (IPFS) a distributed system for storing data in objects containing data and links. The problem with images is that they must be divided into parts of size up to 256 Kb, which is the limit set by a single IFPS object. A similar approach may be found in "A Security Transmission and Storage Solution about Sensing Image for Blockchain" (2019), where the authors presented an IoT-based solution for secure transmission and storage of digital images. Therefore, in exisitng solutions, the main trend is to divide the image and store its parts in the blockchai (Koptyra & Ogiela, 2020).

RedVault and the Imagechain --- Application of Blockchain Technology for Images shared like goals of ensuring secure storage and transmission of sensitive data. In the context of imagechain according to Koptyra and Ogiela (2020), medical images are encrypted, stored, and retrieved securely using blockchain and smart contracts, with some utilizing the Interplanetary File System (IPFS) for distributed storage. In the same way, RedVault focuses on safeguarding sensitive medical data for the Bagani Community Center's volunteer management system, leveraging blockchain encryption to ensure its security and privacy. While imagechain addresses challenges such as dividing images into manageable parts for storage, REDVAULT also employs innovative methods to efficiently handle, protect, and manage medical records.

Health Information Privacy in the Philippines: Trends and Challenges in Policy and Practice

Health information privacy in the Philippines has evolved in parallel with advances in technology, but the underlying principle remains the same: health workers must ensure the protection at all times of their patient's privacy. Technological developments, however, have outpaced policy and practice. There is a need to unify the patchwork of regulations governing privacy; fortify the evidence base on patient and provider perceptions of privacy; and develop and improve standards and systems to promote health information privacy at the individual and institutional levels. Ultimately, it must be stressed that the quest for

privacy is but one critical component in improving the overall quality of care available to Filipinos (Antonio et al., 2016).

The need to protect health information in the Philippines is closely related to the purpose of RedVault. As technology improves, better systems are needed to keep patient data safe, especially in local areas. RedVault helps meet this need by using blockchain to securely store and manage medical records of volunteers and patients at the Bagani Community Center.

Patient Confidentiality in Healthcare

Patient confidentiality is at the center of good healthcare. It helps ensure that patients feel safe in healthcare settings. With the digitization of patient records, sharing information with patients has become increasingly simple for physicians via online tools and web portals, and even social media. But healthcare data breaches remain a threat. According to HIPAA Journal, 3,054 healthcare data breaches between 2009 and 2019 have led to the "loss, theft, exposure, or impermissible disclosure of 230,954,151 healthcare records."

The study of RedVault is deeply connected to patient confidentiality and healthcare data security. Given the alarming number of healthcare data breaches over 230 million records compromised between 2009 and 2019, RedVault's use of blockchain encryption offers a game-changing solution to protect sensitive medical information. Since millions of medical records have been leaked in data breaches, RedVault makes sure sensitive information stays safe by encrypting it, allowing only authorized healthcare workers and volunteers to access or update records. This is especially important in community health programs, where volunteers help with HIV prevention.

Filipinos can choose how to get tested for HIV

Public and private health facilities across the Philippines provide HIV testing and counselling. This is attended by trained health workers. These facilities vary from primary

care facilities to treatment hubs in hospitals (Filipinos Can Choose How to Get Tested for HIV, 2019).

RedVault helps healthcare volunteers manage patient information securely, especially in HIV testing and treatment centers. Since public and private health facilities provide HIV testing, trained health workers need a safe way to store and access patient records.

Review of Related Studies

Blockchain-Assisted Technologies for Sustainable Healthcare System

Blockchain applications for healthcare data management can potentially develop new services for physicians, patients, and health institutions in patient records administration, payment management, claims, and data integrity. This allows patients and healthcare organizations to limit unauthorized access to sensitive information and to maintain irreversible audit trails of patient data access and change. Blockchain and other emerging technologies can potentially be used for sustainable health supply chain activities. By making the supply chain transparent and immutable, it can monitor and protect healthcare data at various levels while maintaining 100% integrity of healthcare data (Jain et al., 2025).

These findings support the goals of RedVault by showing how Blockchain technology can improve healthcare data management. Moreover, RedVault applies Blockchain which is essential to help the Bagani Community Center safely manage sensitive health information, specifically the HTS Form, prevent unauthorized access, and maintain a permanent, unchangeable record of data access and updates. In addition, it also helps the Bagani Community Center by allowing for clear and accurate tracking of volunteer involvement, ensuring transparency and accountability in community activities.

A Blockchain-Based Secure Image Encryption Scheme for the Industrial Internet of Things

Khan and Byun (2020) noted that Blockchain Technology has emerged as a solution for security problems. Due to its dynamic properties, industries have realized that it can play a critical role in the IIoT. This technology can be applied in the industry, not only from a security perspective but also from a transparency and regulatory compliments perspective. A blockchain can significantly revolutionize IIoT. It provides security, peer-to-peer device communications, and new functionality via smart contracts. In this paper, an image encryption scheme for an IIoT-oriented network computing system is presented, which is based on a blockchain.

Blockchain has paved way for solving security problems especially in systems like the Industrial Internet of Things (IIoT), in which secure communication and data integrity are crucial. Correspondingly, RedVault deals with sensitive medical data like HTS Forms that need to be securely transmitted, stored, and accessed. By utilizing blockchain, the system

Deep Learning for Medical Image Cryptography: A Comprehensive Review

Medical image security in the Internet of Medical Things (IoMT) presents several challenges that need to be addressed to ensure the confidentiality, integrity, and availability of medical images. The healthcare industry has always been at the forefront of incorporating new technology to improve patient care, increase efficiency, and enhance overall healthcare delivery. Information technology (IT) has revolutionized the healthcare industry, improving patient care, enhancing communication and collaboration, and optimizing healthcare processes. Its continued advancements hold significant potential for further transforming healthcare delivery and promoting positive health outcomes. In such a highly IT-oriented era, it is essential for healthcare organizations and technology providers to prioritize the implementation of robust security measures to protect the confidentiality and integrity of medical image transmission over the internet (Lata & Cenkeramaddi, 2023).

The Internet of Medical Things (IoMT) connects medical devices to the internet, making healthcare more efficient, but it also creates risks if data isn't properly protected. RedVault helps solve this problem by using blockchain encryption, which acts like a secure digital lock that ensures only authorized healthcare workers can access medical images. This is especially important for volunteers and community health programs, where patient privacy must be protected while still allowing healthcare providers to use medical images for treatment and research.

Taya-Kilos Volunteer Management System

Technology plays a big role in volunteering efforts today. Fast response time of volunteers is needed nowadays. Through the use of the internet, organizations now are enabled to recruit and respond to different causes in less than 48 hours. Available volunteer programs can now be disseminated and accessed over the web specifically through the use of social media such as Facebook, Twitter and the like. The scope of people that can be recruited widens because of the use of social media to disseminate volunteer programs which helps recruit more potential volunteers for the causes (Go et al., 2014).

According to the study of Go et al. (2014) it is stated how technology takes part in volunteering efforts nowadays. The increasing reliance on technology in volunteer efforts, particularly through fast online communication and social media recruitment, sets the foundation for systems like RedVault. As organizations now need to quickly organize volunteers and keep sensitive information safe, RedVault helps by using blockchain technology to protect medical data and make volunteer management easier. Like other modern tools that use the internet, RedVault allows faster volunteer response, better data security, and wider reach especially useful for community programs like those at the Bagani Community Center in Bacolod City.

Sociological Assessment of the Population's Attitude to the Issues of Primary HIV Prevention

An analysis of the results indicates low levels of public awareness of the importance of primary HIV prevention. It is obvious that there is a need to optimize information work among the population on the part of the specialized center for the prevention and control of AIDS, paying special attention to adolescent school students who are the most vulnerable in matters of risky behavior (Alikova Z R et al., 2025) .

This study supports RedVault by emphasizing the need for improved HIV awareness, especially among adolescents. Our system helps address this by adding a key feature that allows organizing events and sharing announcements for better public health education at the Bagani Community Center in Bacolod City.

From volunteers to vital forces: The untapped power of barangay health workers in curbing HIV in the Philippines.

When trained and empowered, Barangay Health Workers (BHWs) are in the best position to cascade correct and relevant information to their local constituents. As volunteers, they are readily available to implement health strategies in their local setting that could best serve the interest of mitigating HIV in the country through a grassroots approach. It is a game-changer strategy because, being locals in their respective communities, they will be able to lead their youths, influence family constituents to increase awareness of the dynamics of HIV, and communicate with their children more openly. This is a hopeful revolution in the fight against HIV, especially in underserved areas where traditional health professionals are often overworked and overwhelmed by the ratio of population under their care, and the various health programs they must implement under their watch (A. De Los Santos, 2024).

The study of RedVault aligns closely with the role of Barangay Health Workers (BHWs) in grassroots health initiatives. RedVault appears to focus on volunteer management and secure medical data handling using blockchain technology. This could be highly beneficial for BHWs, as it provides a structured system to manage their activities, track their contributions, and ensure secure access to medical records. Since BHWs play a crucial role in HIV awareness and prevention, RedVault could enhance their ability to store, access, and share health-related data securely.

Synthesis

The above collection of reviewed literature and studies provides both support and information to the researchers, widening their perceptions in making their study feasible to implement in the future. As stated in the study of VolunteerHoward (2011) cited by Go et al. (2014), technology paved way for new options in improving volunteering efforts in the present.

While RedVault focuses on volunteer management system, blockchain plays a significant role in ensuring secure, transparent and effecient data management that is important when volunteers of Bagani Community Center stores the captured medical data. This ability of blockchain technology is supported by facts and information mentioned in the studies above.

All studies collected are related in the area of the importance in keeping all the records and files which helps to achieve the general objectives of the present study. It will give assurance that these files are secured and accessible while maintaining goood coordination between staff and volunteers. It guarantees the staff and volunteers' task to be easier, faster and more efficient for the benefit of Bagani Community Center in Bacolod City.

Theoretical Framework

The proponents used distinct theoretical frameworks for various domains to explain human behavior and decision-making related to technology and information which are the following: Information Processing Theory (IPT), Fit Viability Theory (FVT) and Technology Acceptance Model.

Foremost, the Information Processing Theory (OIPT) defines as the theory that identifies three important concepts: information processing needs, information processing ability, and the fit between the two to get ideal performance. Organizations need quality information to cope with environmental uncertainty and improve their decision-making. Environmental uncertainty stems from the complexity of environment and dynamism, or the frequency of changes to various environmental variables. Typically, organizations have two strategies to cope with, namely: uncertainty and increased information needs: (1) develop buffers to cut the effect of uncertainty,

and (2) carry out structural mechanisms and information processing capability to enhance the information flow and thereby reduce uncertainty.

Second, the proponents applied the Fit-Viability Theory (FVT). The model was focused on adoption of internet initiatives that includes two dimensions. One is fit and the other is viability. Fit measures the extent to which new network applications are consistent with the core competence, structure, value, and culture of an organization. Viability measures the extent to the value-added potential of new network applications, requirements of human resource, capital needs. The viability refers to the extent to which the infrastructure of the organization is ready for adopting the technology. This needs to consider the general economic feasibility, technical infrastructure and the social readiness of the organization. In fact, many organizational factors were identified as critical to the success of IT implementation.

The proponents applied the Technology Acceptance Model, a model which is an information systems theory that models how users come to accept and use technology. The model suggests that when users are presented with new technology, a number of factors influence their decision about how and when they will use it, notably: (a) Perceived usefulness (PU)

New innovations and integration of technologies are becoming complex. The element of uncertainty exists in the minds of decision-makers with respect to the successful adoption of them. People form attitudes and intentions toward trying to learn to use the new technology before initiating efforts directed at using. Thus, the actual usage is not be a direct or immediate result of such attitudes and intentions (Bagozzi, Davis and Warshaw, 1992).

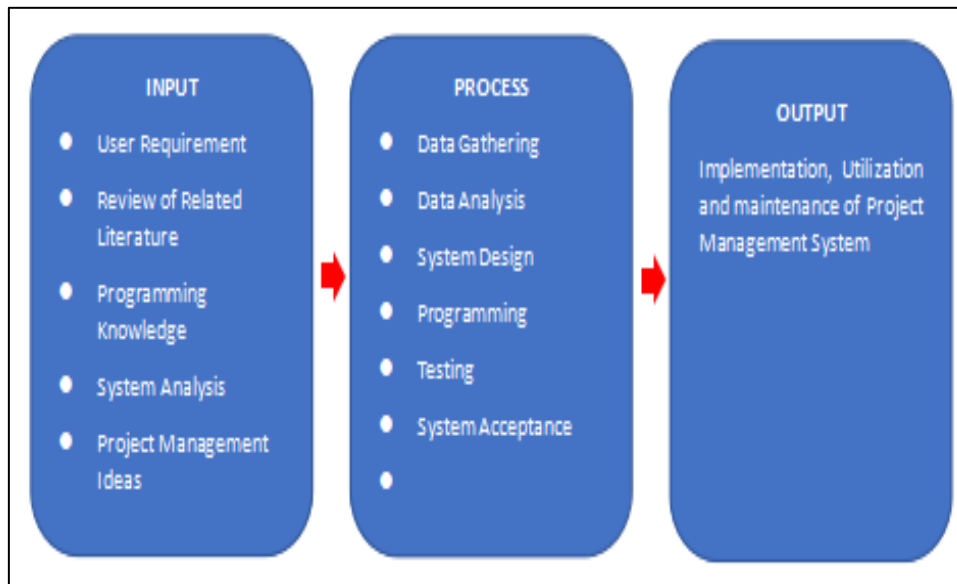Figure 1. *Theoretical Framework of the study*
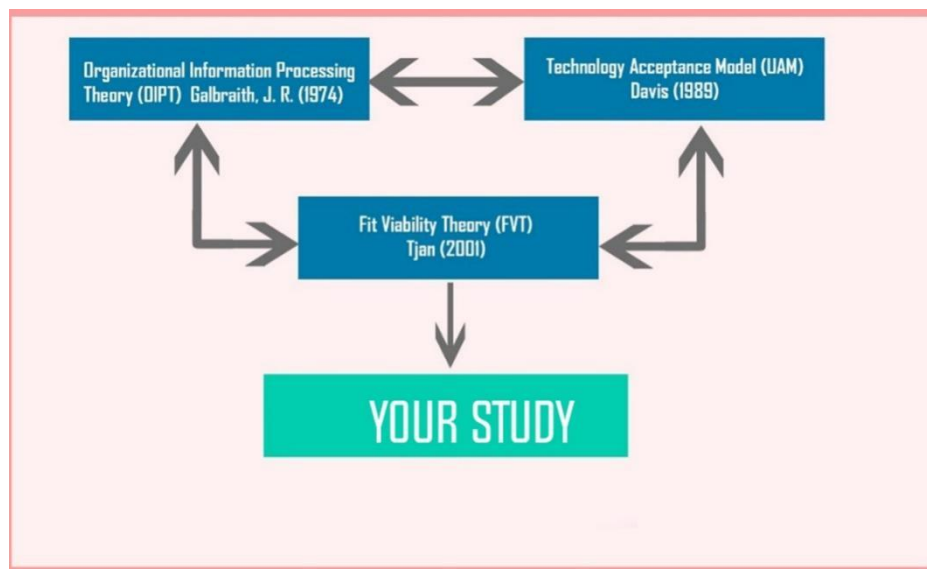
Conceptual Framework

Figure 2. *Conceptual Framework using IPO Model*

The pursuit for understanding and concepts in order to develop and produce an accurate and well-balanced management information system was done with the IPO Method (Input, Process, and Output). The IPO is useful in planning, processing and troubleshooting the development of the *Your Study*. Using the IPO model provides a visual presentation that helps explain complex processes. This study showed the gathered resources used in inputting the data. The study was also based on the process of System Development Life Cycle (SDLC), describes a process for analyzing, designing, creating, testing, and deploying an information system.

The IPO is a method used to describe the system by its function. In the input stage, the statement of the problem and strategies were analyzed, problems were identified and defined in the development of the study. The data underwent a process utilized in developing the system.

Next, the process stage. This involved the methods used to accomplish the system. The Organizational Information Processing Theory (OIPT), Fit-Viability Theory (FVT) and User Acceptance was used as bases on what theories and practices to use and to follow in the development of the project. People, structure, technology, tasks, and functions were used in designing and developing the *YOUR STUDY.*

Figure 1. *Conceptual Framework of the study*
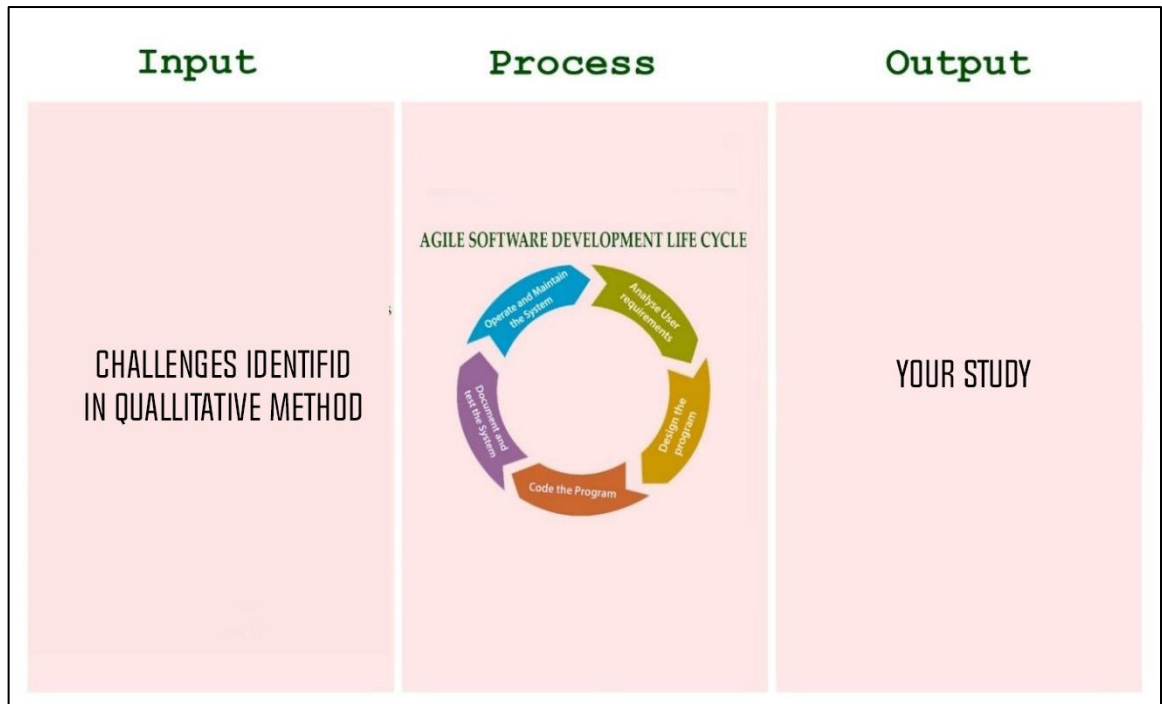
Provide summay description / additional detals in a paragraph here.

CHAPTER III
METHODOLOGY

This chapter presented the methods and procedures on how the capstone project to be done. It includes research design, organizational chart, evalutaion tools, calendar of activities, system specification, general features, resources, requirement analysis, and system development life cycle.

Organizational Chart

This will identify if there is a specific position or person that will use your capstone project. (refer to the sample given on page 2) Org. chart of for your beneficiaries.

Work Flow

This will identify the current process / workflow used within the beneficiaries.

System Decomposition

This section shows the hierarchical representation of the different functionalities of the management system. The features listed served as interdependent modules within the system. Additionally, the section provides different modules that contain Administrative Management, Student Profile, and designated personnel for specific authorities.

Figure 3: STI West Negros University Management System Decomposition
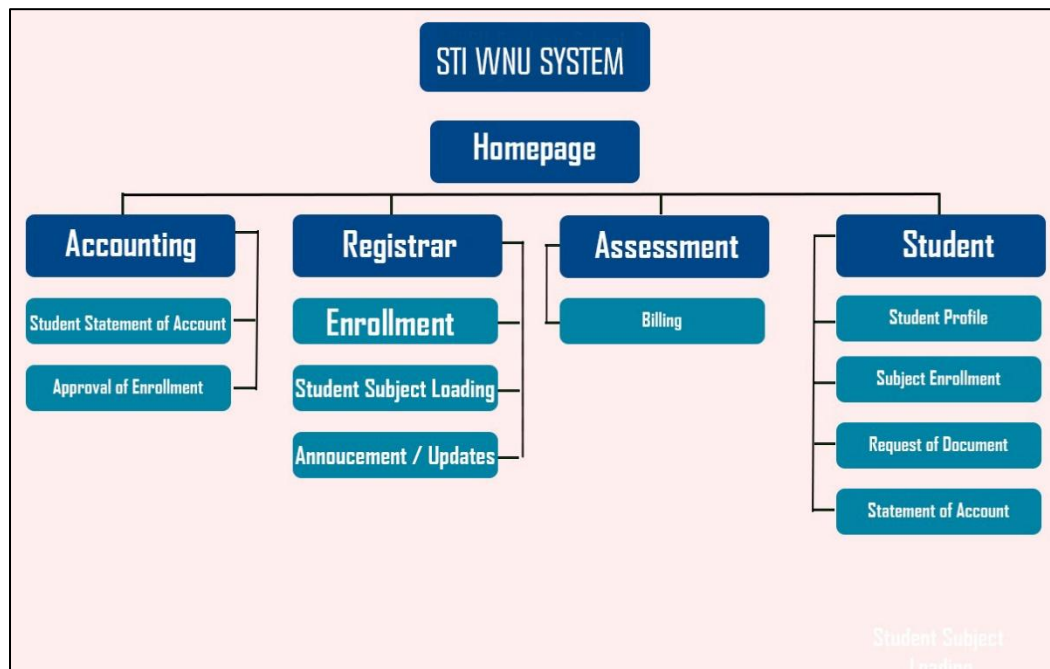
System Prototype

This section discusses the individual Graphical User Interface (GUI) of the developed management system. This section includes the external environment such as the end-users, hardware, software and communication interfaces.

Graphical User Interface

The different user interfaces included were arranged based on the decomposition chart. It includes the screenshots, the interface overview, and the functionality composition. Interfaces were simply designed and consistently organized. The interfaces were based on the actual system functionalities and design of the system entitled, "CPSU-Graduate School, Management System". The screenshots below were discussed and explained including its purpose.

Figure 4: *Homepage*

Provide description here. Kindly input every available features and discuss.

Figure 5: *Admin Dashboard*

Provide description here. Kindly input every available feature and discuss.

Resources

Convert everything into a table format for unification of format.
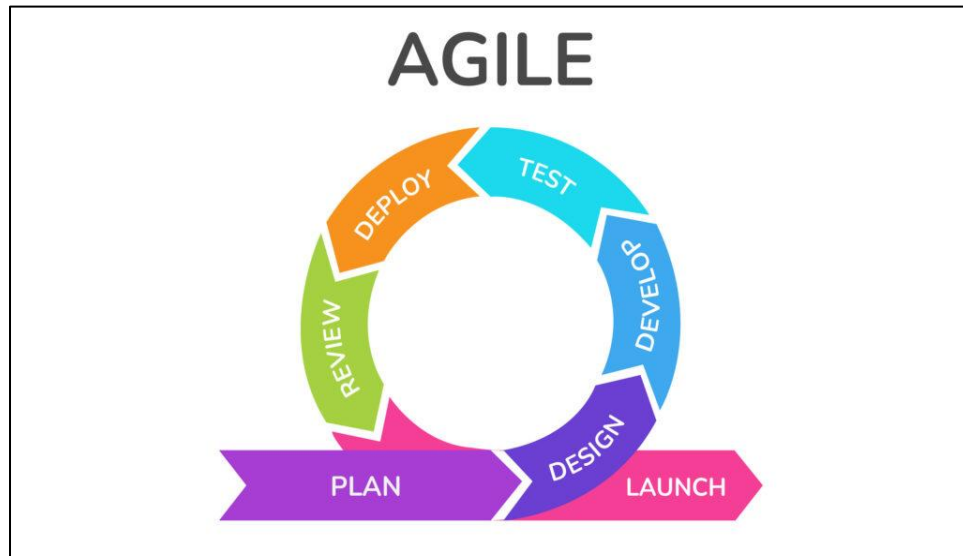
System Design

Figure 3. *Agile Methodology*

Requirements. In this phase, the proponents conducted meetings and interviews with the staff and volunteers of the Bagani Community Center to gather detailed information on their current processes and challenges. They identified the need for a secured system to manage sensitive health data, particularly the HTS Forms and provide a platform that best improves the coordination between staff and volunteers.

Design. In the design phase, the researchers focuses on creating a user-friendly platform while incorporating Blockchain technology for secure data handling. Diagrams such as data flow, entity relation diagram and system design models will be used to guide the construction of the platform.

Development. During development, the team will begin building the core features of RedVault in iterations or sprints. These features included volunteer registration and tracking, HTS Form data management, and Blockchain-based data encryption. Each sprint delivered a working version of a module, which will then improved based on feedback.

Testing. The researchers plan to carefully test every part of the RedVault system to make sure it works as expected. This includes unit testing, system testing, and user acceptance

testing. Extra attention will be given to making sure the Blockchain encryption keeps health data secure, that only the right people can access certain information, and that volunteer tracking is accurate and reliable. The goal is to ensure RedVault is not only functional but also safe and easy to use for everyone at the Bagani Community Center.

Deployment. After successful testing, RedVault will be deployed in the Bagani Community Center for live use. Training sessions were provided to the staff and volunteers to help them navigate and fully utilize the system. Feedback from real users must be gathered for final adjustments.

Review. In the review phase, the researchers will asses the system's performance, usability, and overall impact on the Bagani Community Center operations. After that researchers will gather feedback, identify areas for improvement, and document insights for future development, including possible enhancements like reporting features.

Explain More / Express more during the phases of your SDLC.

Be descriptive on every phase. (Express what are the significance / experience within that phase)

Flow Chart

Remove the Proposed Word for every Flow Chat

Clarify the Flow Chart

Use the Right Symbol of the Flowchart: You Can search: "FLOW CHART SYMBOLS" in google.

You can use multiple flow charts (Admin Flow Chart, User Flow Chart, Costumer Flow Chart)
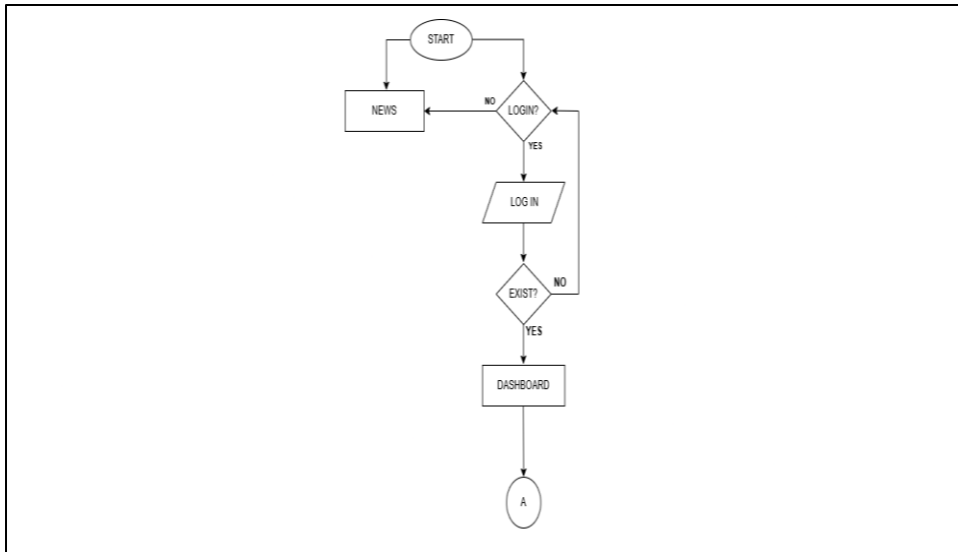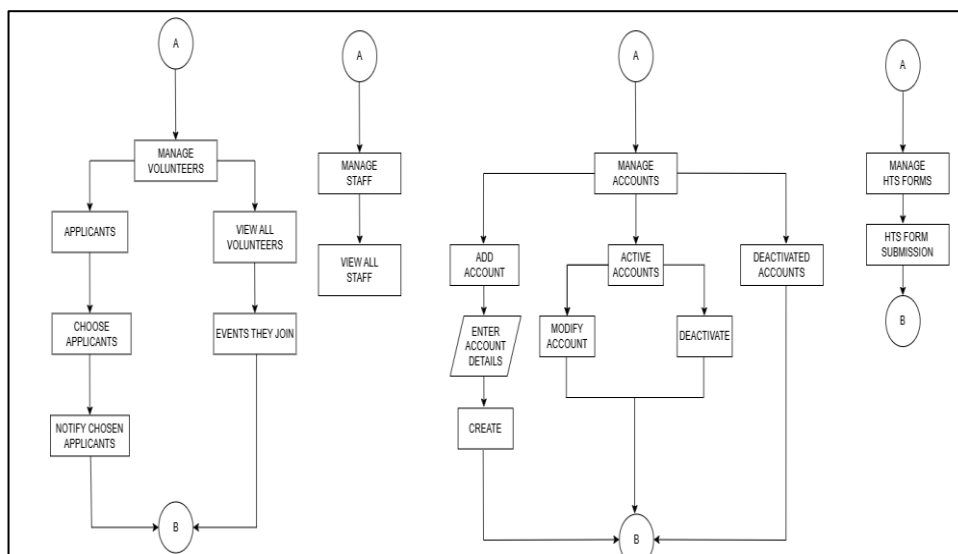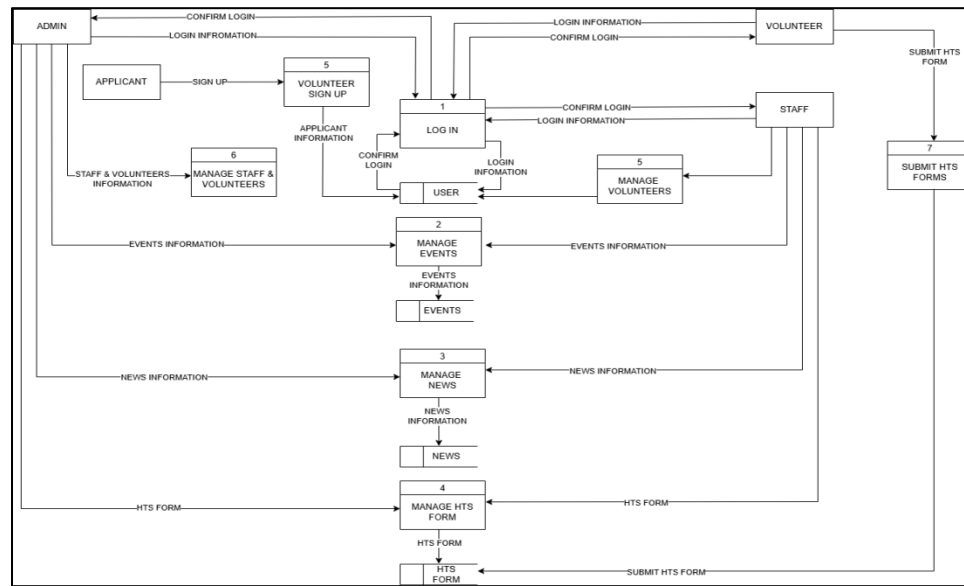

Figure 3.

Figure 3.1
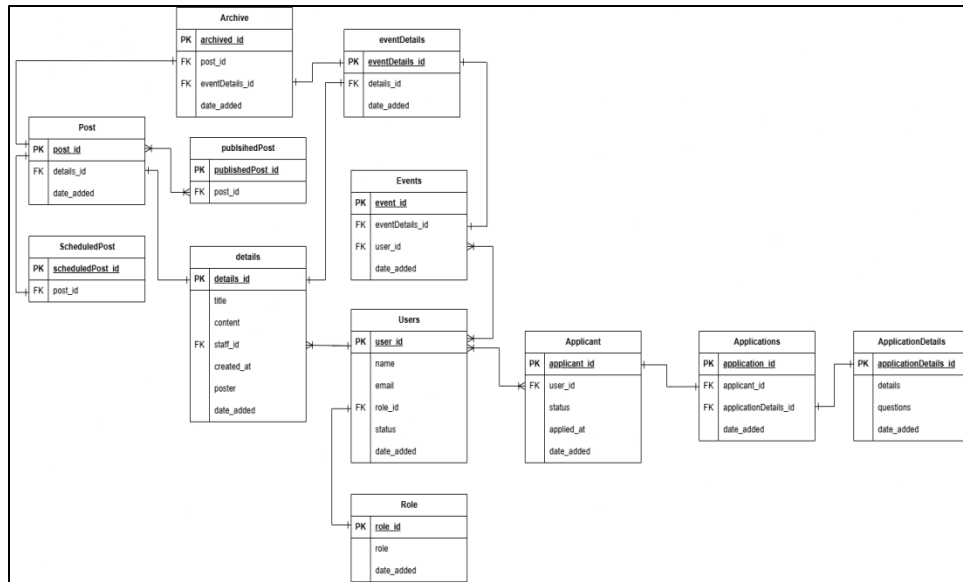
Data Flow

Diagram

It should illustrate what will happen to the data.

What is the Next used of the Data.

What are the data that undergo in that specific feature / office.

Entity Relationship Diagram

Archive
PK	archived_id
FK	post_id
FK	eventDetails_id
	date_added

eventDetails
PK	eventDetails_id
FK	details_id
	date_added

Post
PK	post_id
FK	details_id
	date_added

publsihedPost
PK	publishedPost_id
FK	post_id

Events
PK	event_id
FK	eventDetails_id
FK	user_id
	date_added

ScheduledPost
PK	scheduledPost_id
FK	post_id

details
PK	details_id
	title
	content
FK	staff_id
	created_at
	poster
	date_added

Users
PK	user_id
	name
	email
FK	role_id
	status
	date_added

Applicant
PK	applicant_id
FK	user_id
	status
	applied_at
	date_added

Applications
PK	application_id
FK	applicant_id
FK	applicationDetails_id
	date_added

ApplicationDetails
PK	applicationDetails_id
	details
	questions
	date_added

Role
PK	role_id
	role
	date_added

What is the related of that database to other databases.

No Database must be separated. Everything is connected. You are creating one database for the whole system.