PHINMA ARAULLO UNIVERSITY

<u>BILLING SYSTEM FOR OSPITAL NG LUNGSOD AGHAM NG MUÑOZ</u>

A Capstone Project Proposal Presented to
College of Information Technology
PHINMA Araullo University

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

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ADVISER'S RECOMMENDATION SHEET

This Capstone Project Proposal entitled

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And submitted in partial fulfillment of the requirements of the
Bachelor of Science in Information Technology degree has been examined
and is recommended for acceptance and approval

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Evelyn S. Juliano
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DEAN AND CAPSTONE PROJECT COORDINATOR
ACCEPTANCE SHEET

This Capstone Project Proposal entitled

BILLING SYSTEM FOR OSPITAL NG LUNGSOD AGHAM NG MUÑOZ

After having been recommended and approved is hereby accepted
by the College of Information Technology
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December 2024

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1.0   Introduction

1.1   Background of the Study

Automation allows an organization to automate repetitive tasks, eliminate or reduce human error, and improve efficiency. A billing system uses automated processes in managing invoices, payments, and accounting, eliminating manual tracking of transactions. These systems can generate invoices, apply payments, and update customer records with minimal human intervention. The automation of the billing processes saves time and maintains organized financial records through enhanced accuracy.

In its simplest form, an automated billing system shall gather customer data, calculate charges based on predefined prices, and generate accurate invoices. The generated invoices are sent to the customers, and the payments received from them are automatically tracked. It ensures that records are up-to-date and that no billing errors occur.

In its general application, not only will it save time but also will boost accuracy in financial transactions within the billing systems. This improves the reliability and transparency of business operations because the automation of billing systems

eliminates manual data entry errors. Moreover, these systems enable a business to easily scale up since they handle huge transaction volumes without needing extra manual work.

Statement of the Problem

Ospital ng Lungsod Agham ng Muñoz has been successfully established for the medical accessibility of the locals. The performance can be described as excellent. However, when it comes to the process of billing, the hospital's performance is quite stagnant. They are heavily relying on the system made using form controls inside the spreadsheet. The current system created an impact to the hospital with the following:

1. Inefficiency in billing due to limited controls of the current system.

2. Eliminates redundancy as it requires only a single instance of patient record, with updates applied directly to the existing record when invoicing.

3. Repetition of patient records in invoicing as some previous patients require re-entry of their 2details instead of just updating the existing information.

4. Piling and cluttering of files from lack of appropriate database.

5. Complex and disorganized structure of the current interface, which sometimes leads to confusion among staff.

1.2   Objectives of the Study

1.2.1   General Objective

This study aims to develop an actual functioning system for OSLAM. It is expected to produce a growth in the execution of tasks in billing, boost the transaction and create a user-friendly interface for the employees.

1.2.2   Specific Objectives

1. Efficiency of billing coming from the advanced and flexible controls of the new system.

2. Eliminates redundancy as it requires only a single instance of patient record, with updates applied directly to the existing record when invoicing.

3. Provision of a proper database solution to manage the considerable amounts of record and table files.

4. Simple but highly functional system structure that ensures the user-friendliness of interface

for the staff, reducing confusion and improving workflow.

1.3   Scope and Limitation

1.4.1 Scope

A. Billing Staff

  a. Login

  b. View Patient Profile

  c. Input Patient Billing Types

  d. Generate Invoice

  e. Import/export csv files

  f. Update Patient Profile

  g. Manage Dashboard Summaries of Billing Transaction

B. IT Staff

  a. Secure Internet Connection

  b. Update Price and Details in Billing System

  c. Update Operating System for Compatibility of System

1.4.2 Limitations

a. The billing system cannot run without an internet connection.

b. The billing system only runs on PCs and laptops.

c. The billing system is implemented only on Ospital ng Lungsod Agham ng Muñoz.

d. The billing system will not cover outside billing management, such as inventory management and patient admission.

1.4   Significance of the Study

The proposed system will benefit various stakeholders within the organization :

1. **Hospital Staff :**

   It will minimize one's workload through automation of various manual billing processes that one is required to handle. It will also reduce mistakes as well as enhance the effectiveness of conducting the transactions.

2. **Patients :**

    On billing and payments this will be in every patient's best interest to take a shorter duration. It ensures that the hospital service receives an enhancing appearance of reliability coupled with trustworthiness by providing accurate bills that determine services provided by the hospital.

3. **Management :**

    When all these processes are integrated, it will amount to achieving the single objective of providing integrated data to the management. This also clears the reporting functions to make working easy and functional.

4. **Finance Department :**

   It will commit the reports generation, identify proper money data and also manage the billing procedures efficiently on its own. This will enhance appropriateness of funds management as well as accurate preparation of accounts.

5. **Community :**

   Since the Community will be getting better services once the hospital increases its efficiency in the Billing system, Then more resources will be going round in an efficient manner.

6. **Researcher :**

   The researchers who work in this project will enhance their practical experience in analyzing, designing and implementing an automated system. From this project researchers will improve their problem solving skills, Working in groups and aim for the practical application of the learned theories.

7. **Future Researchers :**

   From this study, Future researchers will be able to gain knowledge and understanding of the kind of automation that can be executed on healthcare systems. It provides us with an excellent opportunity to apply technology to address real world challenges.

1.5   Definition of Terms

For clearer and better understanding, the following terms were conceptually and operationally defined:

Automated Billing System. A system that automates the billing process, including generating invoices and tracking payments.

System Integration. Connecting the billing system with the hospital's existing spreadsheets.

Database. A storage system for organizing and managing patient and billing information.

User-Friendly Interface. An easy-to-use design that helps hospital staff use the system without needing advanced technical skills.

Invoice Generation. The process of automatically creating bills containing the details of services and charges.

Dashboard. A feature that creates easy-to-read summaries of billing transactions and activities by using graphs or charts.

Internet Connection. The system needs a stable internet connection to function. Without it, the billing system won't be able to operate.

Hardware. These are tools used in performing the Automated Billing System on the computer.

2.0   Review of Related Studies

2.1   Related Literatures

Roles of Computer in Medical and Patient Data

In the medical field, delivering quality healthcare in patients is highly expected. Part of this is the task of collecting and storing medical and patient data. A Health management system for example helps medical staff to access information from its database. This also helps in tracking trends in diseases among patients (Clark, 2022).

Efficient Billing Giving Less Complex Audit Refine

According to Moyers(2024), the modern billing system gives the liberty of generating all crucial information immediately.

He states that, *It saves much of your time, power, initiatives, and expenses. You can comprehensively evaluate every document anytime from the control board of the automated invoicing software.*

2.2   Related Studies

Eyesmile Dental and Optical Clinic Management System

Bonafe, Cosico, De Guzman and Dela Cruz (2024) stated that "By leveraging technology, the objective is to modernize clinic operations, minimize errors and enhance the quality of patient care.".

The improved setup for Eyesmile Dental and Optical Clinic brought immense improvements. Based on the findings, all of them; the dentist, ophthalmologist and employee agreed on the evident optimization of processes and management inside the clinic. The dentist confirmed the easier, better and more organized management of patient records and managing medicine and dental supplies. The employee of the clinic testified as well about the system containing features that brought efficiency in managing records including its functions of retrieving, sorting, tracking and the accuracy in managing patient records(Bonafe et al., 2024). This study, therefore, brings much more clarity of how the OSLAM Billing System can help in modernizing and improving the current system of the Ospital ng Lungsod Agham ng Muñoz.

2.3   Related Systems

Automation makes things faster, more accurate, and more efficient by decreasing mistakes and saving time. These systems are very important in fields like education, healthcare, and business, as they help with tasks like data management and tracking of transactions. Businesses and organizations can provide better services with fewer mistakes by automating manual work. According to Norton (2020) in his book Introduction to Computers, *"Computers are so*

fundamental to our society that without them, our economy would grind to a halt, whether or not you work in an office, the way businesses use computers almost every day."

Automating Utility Billing Systems for Local Governments: A Case Study on Enhancing Transaction Accuracy

This study highlights how automating utility billing systems can improve accuracy and speed for local governments. It points out that it reduces mistakes from manual data entry, which is very important for the OSLAM billing system because both aim to make the billing process better through automation and accurate updates of customer information (Jones & Patel, 2020).

Cloud-Based Automated Billing for Utility Services

This study is about cloud-based automated billing systems for the utility industry. The study explores real-time updates, billing accuracy, and easier payment tracking. This is very closely related to OSLAM billing system, which aims at automating data management with more efficient operations (Martin & Garcia, 2020).

Effectiveness of Agile Methodology

This study analyzes the effectiveness of using the Agile methodology in general. The study explores the

challenges faced by project managers during development. *Marques, Morais, Gonçalves(2023) stated that "In significant conclusion, it is imperative to establish a project management methodology to increase the efficiency of the project, increase the communication between stakeholders and allow flexibility of changes during the project execution."* This is very closely related to the OSLAM Billing System, which aims at using the SCRUM, which is an Agile team collaboration framework (Marques et al., 2023).

2.4   Synthesis

Throughout many generations, healthcare has been significant to society. It has been standing firm in helping humanity. Part of its strength is overcoming the challenges on its systems and improving through time. In a modern period such as our generation, it is expected to gain even all the more enhancements. In order to cater the needs of many people, efficiency is paramount. Moyers(2024) stated that an efficient billing system gives less complex audit refinements. This will definitely result in the liberty of generating all crucial information immediately, meaning, it would really increase the efficiency.

Another sign of an improved system inside the healthcare industry is the ability to form and store

accurate patient records. It can be attained by automating the records. To Norton(2020), automation gives the power of making things more efficient and more accurate. Two things are granted here. Accuracy is promised and efficiency is yet again, present here. This shows that it is possible to not only save time but to also diminish the mistakes. Jones & Patel(2020) also points out that automating utility reduces mistakes from manual entry of data as well as from updating the record.

Real-time data brings competitive advantage as well in organizations, allowing a quick response to the needs of users. If a hospital possesses this quality, patient care will get highly boosted. Cloud-based automated billing for utility services, according to Martin & Garcia(2020), provides real-time updates, billing accuracy, and easier payment tracking. The operations in billing will surely elevate.

Bonafe, Cosico, De Guzman and Dela Cruz (2024) evidently showed in their studies how a clinic achieved its amelioration. From the experience of the Dentist, to the Ophthalmologist and up to the employee, visible results are clear. The Eyesmile Dental and Optical Clinic Management System has optimized the processes and provided easier and more efficient management of patient records, medicine and

medical supplies with the help of its functionalities such as retrieving, sorting and tracking.

To develop a system that shares the same functionalities as the statements that preceded it, a good methodology must be implemented along the way of development. Agile methodology has proven its effectiveness in the study of Marques et al.(2023). It gives efficient development, better communication between stakeholders and adaptability to changes during the project execution phase.

All of these are also the targets of the OSLAM Billing System. These assertions from various researchers give much firmer support and more assurance of success in the study.