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WEB-BASED INVENTORY MANAGEMENT SYSTEM FOR SAN ESTEBAN NATIONAL HIGH SCHOOL

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Chapter 1

INTRODUCTION

Background of the Study

School is a significant social institution of learning that is widely acknowledged for its role in forming the personalities, manners, and mannerisms of societies through the acquisition of physical, psychological, moral, intellectual, emotional, and intellectual growth. A school environment and its activities can be efficiently controlled and maintained through proper school inventory management when the social structure is taken into consideration (Chinyere, Ogbonnaya, Love, & Education, 2019). School inventories are essential for any school's efficient operation, (Zamfara State Government, 2017). The term inventory is defined as the raw materials used in production as well as the goods produced that are available for sale. A company's inventory represents one of the most important assets it has because the turnover of inventory represents one of the primary sources of revenue generation and subsequent earnings for the company's shareholders (Kenton, 2022), Effective inventory management enables businesses to balance the amount of inventory they have coming in and going out. The better a business controls its inventory, the more money it can save in business operations. Organizations from small to large businesses can make use of inventory management to track their flow of goods. There are numerous inventory management techniques, and using the right one can lead to providing the correct goods at the correct amount, place and time (Cole, 2021.)

A study by Fin Lawrence in 2017 aimed to improve the inventory management by designing an inventory system. The system helped them maintain an accurate and updated recorded of inventory on hand and at cost. Whenever items or materials is being

made, the web-based inventory system shall record the inflow of the items. This will help lessen the effort in conducting inventory system. This will provide company or organization because an updated inventory would be available anytime. With this, would be able to determine right away when to make an order to avoid inventory shortage.

The Web-Based Inventory Management System is developed for desktop systems to facilitate school administrators manage inventory data. It can be used efficiently for physically separated schools in different locations. Web-based inventory information system is designed and implemented as a website so that users can easily access and use the system. The website of the web-based inventory is used to manage incoming and outgoing inventory items. (Arrieta et al, 2020)

The San Esteban National High School, particularly in the Supply Office, is using the manual system, which covers the process of manually writing down the items information, looking for the items availability like markers, paper clips, bond papers, board, erasers and other stocks that they are using every day, they use file case cabinets for filling. These procedures are prone to errors and it has high cost when storing data for it consumes a lot of papers for keeping the records. There is also a possibility for the stored paper-based files to be torn, damage, or lost. They are also prone to termite attack, or getting wet. The proposed system will eliminate these deficiencies of the manual paper-based record keeping because the files will be stored electronically in the computer and in the cloud storage. The files would be available anytime and anywhere online. Thus, the web-based system would be more beneficial and effective than the paper-based system.

The school's current inventory system is manual and paper-based. The property custodian is using Microsoft Excel to encode the records then print the same records for storage in folders. The researchers proposed the development of a Web-Based Inventory Management for San Esteban National High School to make inventory record keeping and updating easier and more convenient. The records would be more accessible and secured since they will be stored electronically.

Conceptual Framework of the Study

This section shows the conceptual framework of the study. This serves as the outline on how the proponents conducted the study.

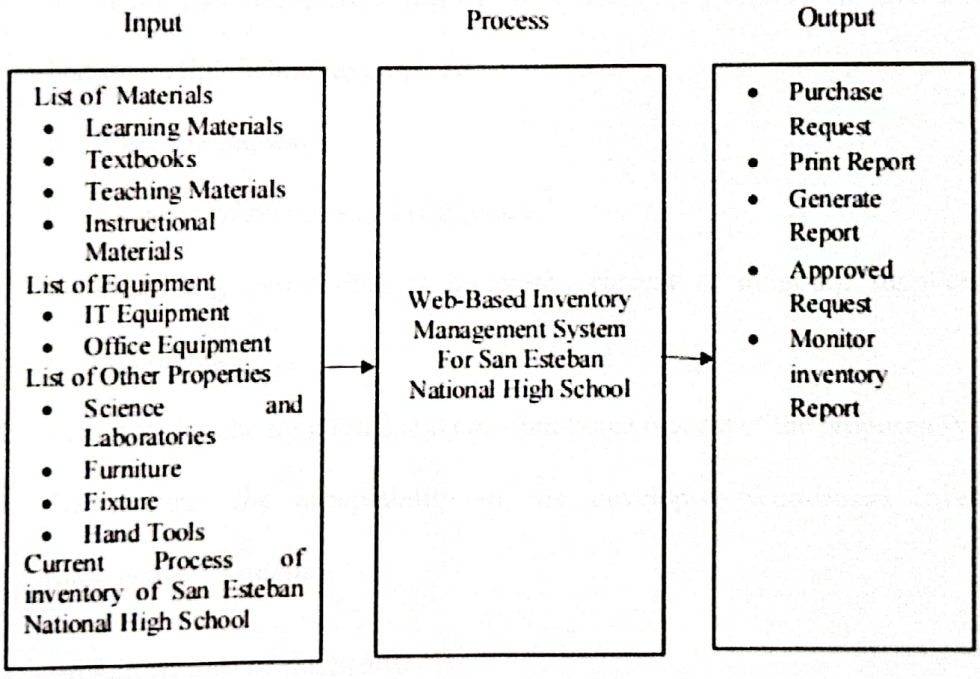

Figure 1. Conceptual Framework of the study

Figure 1. shows the Input, Process and Output for the conceptual framework of the study. Input includes current process of inventory of SENHS, List of Materials which are learning materials, text books, teaching materials, and instructional materials. Then the list of Equipment which are IT equipment and Office Equipment. And the List of

the other properties which include the science and laboratory, furniture, fixture, and hand tools. It also shows the process which is the web-based inventory system and for the output, it includes purchase request, print report, generate report, approved request, and monitor inventory report.

Objectives of the Study

This study aimed to develop a Web-Based Inventory Management System for San Esteban National High School.

Specifically, this proposal intends to:

1 To determine the current process of managing inventory in San Esteban National High School in terms of:
   a. Purchase request
   b. Issuance of supplies and equipment
   c. Recording monitoring of incoming, current & outgoing supplies and equipment
2 To determine the functional and non-functional request of the proposed system.
3 To evaluate the acceptability of the developed Web-Based Inventory Management System.

Scope and Limitation of the Study

This study was conducted in San Esteban National High School (SENHS), located at San Esteban, Ilocos Sur. The system provides a feature to record the current and incoming supplies and equipment of the school. The admin user can monitor the quantity of supplies and other equipment that are in stock, as well as those issued to teachers and staff. The system also allows the admin user to print inventory reports.

A teacher or staff can send a request letter for a particular supply or material, which will be received and approved by the School Principal. When the request is approved and the item/s requested are available in stock, they will be issued to the person who requested. There is also a transaction history displayed on the system dashboard. Incoming and outgoing supply is automatically updated in the system. The system is connected to a network.

Importance of the Study

This study is beneficial and helpful for the following:

The **Administrator**. This study will help the admin to organize inventory procedure and different transactions made in their respective areas.

The **Property Custodian.** This study will benefit the property custodian regarding the monitoring and updating of stocks in the inventory.

The **Teaching and Non-Teaching.** This study will benefit the school staff to easily sent a purchase request which will be approved by the admin.

The **Researchers.** The proponents are able to enhance more their programming skills by applying the theories that were acquired during their past year level. This is the best thing that they are able to apply their knowledge in programming.

The **Future Researchers.** The future researchers can use this project as a simple study guide if ever they conduct some study to develop a system. This project can serve as their reference; they can use the data in project for future studies.

Chapter 2

METHODOLOGY

This chapter presents the research methodology which includes the research design, software model, project plan, project assignment, research instrument, population and locale, and data analysis.

Research Design

The researchers used the descriptive developmental type of research to organize the presentation, prescription and interpretation of the data and the results served as a basis for the developed system, the Web-Based Inventory Management System for San Esteban National High School. According to Atmowardoyo (2018), Descriptive research is defined as a research method used to describe the existing phenomena as possible. Researchers doing descriptive research do not attempt to modify the topic of study to ascertain cause and effect relationships. This method of research will make the research understand and have a clearer view of the current situation of the record and file of SENHS specially in Web-Based Inventory Management System, Thus, the researcher will then formulate and develop the system through analysis, interpretation, and determination of its defect, we the researchers used this method to gather information about the Inventory management system and the problems that will be encountered in terms of record and file. The observation of the problems of the procedures and policies inside the SENHS and the analysis of documents used specially the forms that the SENHS need. All the gathered information through this method were analyzed, interpreted, and integrated into the proposed system.

The developmental method of research was on the development of the system. The developmental method of research has been defined as the examination of the process

and impact of specific instrumental design and development efforts or participation in instructional strategies, progression, or evaluation activities while also discussing the process; or examining the process of instructional design, development, and assessment in its whole specific process of components. This research method will assist the system developers. Various programming languages and packages suitable for the system were also identified. The best user interface will be designed and integrated into the system to allow smooth data flow.

Software Model

Agile Software Development Life Cycle (SDLC) is the combination of both iterative and incremental process models. It focuses on process adaptability and customer satisfaction by rapid delivery of working software product. Agile SDLC breaks down the product into small incremental builds. These builds are provided into iterations. Phases include defining the requirements, planning, designing, creating, testing, and delivery were essential in traditional software development. In contrast, the agile methodology aims to release the first increment in a few weeks and the full piece of software in a few months.

In the Agile SDLC development process, the customer is able to see the result and understand whether satisfied with it or not. This is one of the advantages of agile SDLC model. One of its disadvantages is the absence of defined requirements so, it is difficult to estimate the resources and development cost

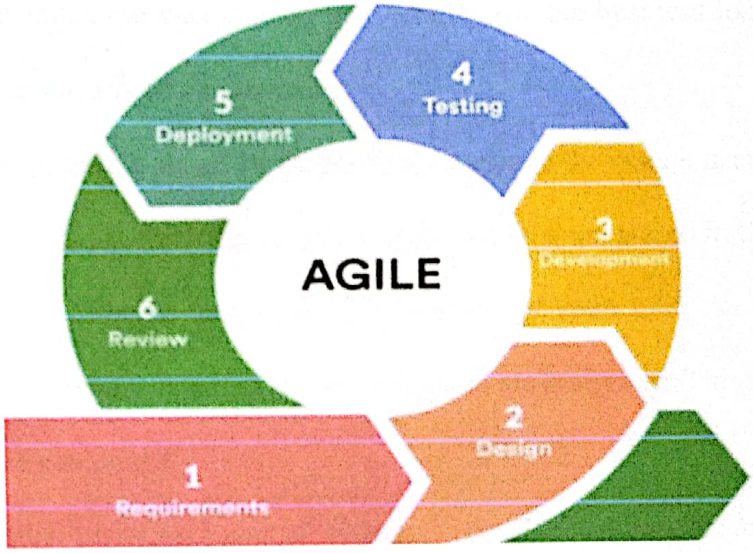

Figure 2: Agile Software Development Life Cycle

The six phases that will be used to implement Agile Software Development cycle (ASDC) are as follows:

Requirement Analysis. In this phase, all possible requirements for the system to be developed are captured and documented in a requirement specification document. It centered on defining and capturing the requirements and problems that the system would address and solve. During this phase, the proponents gathered data about the current system and process of inventory. The proponents also collected data from the inventory documents which is used to be the basis in the development of the proposed system.

System Design. This phase studies the requirement specifications from the first phase and prepares the system design. This system design aids in the specification of hardware and system requirements, as well as the definition of the overall system architecture. During this phase, the proponents largely covered technical design requirements, such as programming language, data layers, and services, at this stage.

The design specification was created that details how the business logic covered in analysis was technically implemented.

Development. In this phase the proponents developed the system in small programs called units, with input from the system design, and then integrated in the next phase. Unit testing was done to assure the functionality of each unit. As the design is completed, the programs or codes for the next phase are integrated. This was done until the system was completed.

Testing. After testing each unit, all of the units developed during the implementation phase are integrated into a system. Following integration, the entire system is tested for faults and failures.

Deployment. Once the functional and non-functional testing is done; the product was presented to the clients at San Esteban National High School. The proponents used the WAMMI survey instrument to determine the acceptability of the system by the clients.

Review. There are few issues that arise in the client environment. Patches are released to address these issues. In order to improve the product, newer versions are released. Review is performed in order to implement these changes in the customer environment.

Project Plan

Figure 3 shows the timeline that was used as a project management tool to clearly illustrate the status of the process of development of the proposed project entitled Web-Based Inventory Management System for San Esteban National High School. The proponents started the project 1st week of September and to be done on the last week of June.

	Q3-Q4 (202) – Q1 (2023)																	
	SEPETMER				OCTOBER				NOVEMBER				DECEMBER				JANUARY	
INVENTORY SYTEM	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2
Requirement analysis																		
Design																		
Development																		
Testing																		
Deployment																		
Review																		

Table 1. The Project Schedule Gantt Chart

Project Assignments

The project's team members' roles and responsibilities within the proposed system, the Web-Based Inventory Management System for San Esteban National High School.

Project Role	Name	Functions
Project Manager	Janella Rapanut	• Responsible for coordinating with the project team • Maintain open communications with all the members
System Analyst and Designer	Kyla Cadag Christine Joy Trinidad	• Coordinates the technical team's efforts in resolving challenges and ensuring that solutions are practical and consistent.
Programmer	Christine Joy Trinidad Kyla Cadag	• Responsible for managing systems planning design team and building the project.
QA/ Tester	Alyssa Jane Aglugob Janella Rapanut	• Responsible for checking the debugging queries of the project. • Evaluate software needs and communicate findings to the project team.
Documentation/ Technical Writer	Leslie Domingo Jemma Sabado Kyla Cadag	• A status report on the whole project. • Publish project plan timeline and project requirement sheet

Table 2. Project Team Assignment

Population and Locale of the study

This study made use of the purposive sampling technique in determining the respondents of the acceptability testing using the WAMMI instrument. The respondents of the study are the faculty members, and non-teaching personnel of San Esteban National School. The proponents conducted the survey in San Esteban National High School in Villa Quirino San Esteban, Ilocos Sur.

Table 2 shows the distribution of the selected respondents to participate in the conducted survey for the acceptability of the proposed system. The study involved the participation of the 30 respondents, namely the non-teaching personnel (3), Senior High Teachers (21), and Junior High Teachers (6) of San Esteban National High School.

Respondents	N
Non-Teaching Personnel	3
Junior High Teachers	21
Senior High Teachers	6
TOTAL	**30**

Table 3. Distribution of Respondents

Research Instruments

The proponents used the Website Analysis and Measurement Inventory (WAMMI) instrument to determine the acceptability of the developed system. The WAMMI survey measures user satisfaction by asking website visitors to compare their expectations with what they actually experience on the website. It is based around a standardized 20-item questionnaire. It has been scientifically proven and has a reliability data rating of between 0.90 and 0.93. (WAMMI, 2020)

Internet Research and Library Research, and Informal Interview were also the tools that were used in the study. The informal interview involved the participation of the school staff of San Esteban National High School while the internet and library research were used to collect related study as a basis for the conducted study.

Data Analysis

The data gathered from the survey to determine the level of acceptability of the developed system were treated statistically using frequency count, mean and percentage. The summarized data were then analyzed using the scale presented in Table 3.

Point Value	Mean Range	Descriptive Rating	Descriptive Interpretation
5	4.21-5.00	Strongly Agree	Very Highly Acceptable
4	3.41-4.20	Agree	Highly Acceptable
3	2.61-3.40	Neither Agree	Moderately Acceptable
2	1.81-2.60	Disagree	Slightly Acceptable
1	1.00-1.80	Strongly Disagree	Not Acceptable

Table 8. Descriptive Interpretation on the Level of Acceptability of Web-Based Inventory Management System for San Esteban National High School

The data gathered were categorized from Not Acceptable to Very Highly Acceptable. Mean ranges from 1.00-1.80 described as Strongly Disagree and interpreted as Not Acceptable, 1.81-2.60 described as Disagree and interpreted as Slightly Acceptable, 2.61-3.40 described as Neither Agree and interpreted as Moderately Acceptable, 3.41-4.20 described as Agree and interpreted as Highly Acceptable, and 4.21-5.00 described as Strongly Agree and interpreted as Very Highly Acceptable respectively.