**OPERATIONAL TERMS**

The operational terms are results of a process of operationalization and are used to define in terms of a process. It is needed to determine the presence of the system.

***Black box testing* –** it involves testing a system with no prior knowledge of its internal workings. A tester provides an input, and observes the output generated by the system under test.

***Complaint report* –** it refers to an expression of dissatisfaction toward the other party. It usually made by an end-user who notice a problem with the product or service.

***Descriptive research* –** It is a type of research method that aims to accurately and systematically describe a population, situation or phenomenon. It usually

***Developmental research* –** It is a systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness.

***Evaluation procedure* –** this process involves collecting and analyzing information about a program's activities, characteristics, and outcomes. Its purpose is to make judgments about a program and to improve its effectiveness.

***Feedback system* –** It refers to a feature within a system that allows users to send feedback that is used for building up reviews about the service.

***Comments -*** *you should describe this according to how you used it in your study*

**APPROVAL SHEET**

The thesis entitled **E-HANAP:** **A DEVELOPMENT OF MEDICINE AVAILABILITY SYSTEM FOR ALL THE PHARMACY IN CALAUAN LAGUNA** prepared and submitted by **KENT NOLAN JULIANO, WILMER ANDRE CRUZADO**, and **KYLE DANIEL DE RAMOS** in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology is hereby recommended for approval and acceptance.

*Comment:* hehe

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We dedicate this milestone achieve to our **FAMILY** being there for us, supporting and encouraging us nonstop since the beginning until the end.

*Comment: 1 page only*

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Pharmacy is the clinical health science that links medical science with chemistry and it is charged with the discovery, production, disposal, safe and effective use, and control of medications and drugs. The practice of pharmacy requires excellent knowledge of drugs, their mechanism of action, side effects, interactions, mobility and toxicity. At the same time, it requires knowledge of treatment and understanding of the pathological process. Some specialties of pharmacists, such as that of clinical pharmacists, require other skills, e.g., knowledge about the acquisition and evaluation of physical and laboratory data.

*Comment: WHY DO PHARMACIES NEED TECHNOLOGY?*

**Project Context**

Drug shortage during the COVID-19 pandemic has affected almost all the countries. Shortage of both prescribed and over-the-counter drugs may develop. Disruption in the local production process and international transport are the main reasons for the short supply. (Hussain, 2020) Lack of medicines can block the operation of the health care system. Credibility, effectiveness and attendance at health facilities, depend to a large extent on patient being able to obtain relevant medicines at the right time. A good diagnosis is not much use if the patient cannot obtain the necessary treatment. The availability and accessibility of medicines at public health facilities thus becomes a determinant of the quality of health care and could be used as a tool for increasing healthcare coverage. (Sharma, n.d.)

Availability Management system is a technique through which stocked goods, inventories, and non-capitalized assets are kept in a proper manner according to their specific shape and placement. An Inventory can be any item that a business holds to receive the goal of resale or repair. Inventory Management is a process of ordering, storing, and using inventories. This stock management includes generating the lead on raw materials, components, and finished products, along-side warehousing and processing of such items in your company. The concerns on monitoring and managing the products or inventory can be addressed with the use of medicine availability system. Inventory authorized personnel can view, add, and update, including the number of stocks, products that need to restock per batch and their expiration date and delete it if necessary. The proposed system will help improve product availability and more accurate reports of inventory as it consists of a list of available medicine and where pharmaceuticals are available using web-based application and is accessible for the consumers and an inventory system for each pharmaceutical for authorize inventory personnel to properly monitor the products. The proposed system will use Rapid Application Development (RAD) in development and HTML, CSS, JAVASCRIPT, BOOTSTRAP will be utilized for the design and development of the window application and MySQL as its database. In addition, testing and user evaluation will be conducted after the development of the system to ensure the viability and usability for the possible implementation.

***Comment:*** *ESTABLISH THE PROBLEM HERE.*

**Figure 1.** Conceptual Framework of medicine Availability System for all the Pharmacy in Calauan, Laguna. The conceptual framework of the study illustrates how the research will be conducted. The framework reflects the research objectives and activities to be conducted.

*Comment: FORMAT THIS FIGURE and ALSO, DISCUSS THE CF IN A SEPARATE PARAGRAPH*

As mentioned in the article Hasan, Maraj; Bappy, Abdur Rahman; Sojib, Amir Hossain (2019) in the “All in One Online Medical Shop” even if you are unwell and unable to go outside to get medicine, it is quite tough to do so. It is an internet program that allows you to buy a medicine. Patients can find any type of medicine on this website. The client's specifications were used to construct this web application. People are accustomed to purchasing goods through the internet these days. It saves time and human work, and our web-based solution might be useful in situations when manual procedures are required

According to Junhao Zhong, Zhengjia Mao, Hangpeng Li, Yoshimasa Masuda, Tetsuya Toma (2021) in “Regulated Digital Pharmacy Based on Electronic Health Record to Improve Prescription Services” the paper-based process of obtaining prescription medications in Japan causes issues such as patient inconvenience, high government spending, and a lack of regulation on online counterfeit drug transactions, especially given Japan's aging population and long-standing National Health Insurance (NHI) system. Electronic health records (EHR) and computerized physician order entry (CPOE) systems could be used to create a regulated digital pharmacy (RDP).

As mentioned in this article Himani Singh, A Majumda, N Malviya (2020) in the “E.-Pharmacy impacts on society and pharma sector in economical pandemic situation” nobody knows about covid-19 but now this virus has spread to almost every country, infecting at least 3,062515 people and death approx 211449 people with badly impact on economies of the most countries and also broken their health-care systems. At this time covid-19 disease is almost spreading all over the world and society. Majorly Pharmacy services act as a pillar at this pandemic situation for the public health. China is the first country where covid-19 outbreak started and some current data of consumer behavior and their habits are showed that society take some safe and preventive measures during lockdown and social distancing time which increase growth of ecommerce demand is inevitable. Now a day’s e-pharmacy is being adapted because medications can be ordered in a one click and conveniently delivered to customer door step with some risk like misuse of drugs and self-medication especially for those drugs which comes under the schedule H and X.

*Comment:* DO NOT USE PRONOUNS, RELATE THIS WITH YOUR STUDY, and RELATE WITH YOUR STUDY

**Software Methodology**

**(About iterative model)**

***Comment:*** *NOT JUST ABOUT ITERATIVE MODEL. YOU SHOULD SHOW ALL MODELS THAT YO CONSIDERED*

**Technology Gap Analysis**

According to Hongbo Lai, Hao Shi, Yang Zhou (2020) in “Regional technology gap and innovation efficiency trap in Chinese pharmaceutical manufacturing industry” his research stated that instead of blindly pursuing R&D investment intensity and superstitious innovation efficiency, regions in the efficiency trap should strive to find opportunities for industrial transformation and focus on the industrial transformation of new technology, new industry, and new opportunities, according to the findings. To free up resources for high-quality technological innovation in other parts of the world. Furthermore, the Chinese government should make advantage of its public hospital system to standardize and develop centralized medicine procurement, as well as to remove low-quality innovation.

*Comments: WHAT ELSE?*

**Synthesis**

 Based on the study of N.J. Hall G. Donovan S. Wilkes (2018) in “A qualitative synthesis of pharmacist, other health professional and lay perspectives on the role of community pharmacy in facilitating care for people with long-term conditions” his research is an expanded role for community pharmacy (CP) in enabling care for patients with long-term diseases is gaining popularity (LTCs). Understanding the opinions of stakeholders is critical in order to identify crucial concerns that may have an impact on the roles and related services' future development. Despite indications of good attitudes and a changeable culture, there is still a lack of clarity concerning the pharmacist's current and potential role in this field. The author proposes a theoretical framework that emphasizes the changing character of the process of lay and health professionals' understanding of their roles and involvement with services.

*Comment:* THIS SHOULD INCLUDE ALL KNOWLEDGE THAT YOU GAINED IN RRL

**Table 1.** The total number of respondents in the town of Calauan Laguna.

|  |  |
| --- | --- |
| **Respondents** | **Sample Size** |
| Pharmacist | 3 |
| Population | 97 |
| Total | 100 |

*Comments:* THIS IS RESPONDENTS OF YOUR STUDY and WHERE IS YOUR TOTAL POPULATION?

***Internet Research***

The researchers conducted their research on the internet in order to determine the potential functions and features of the study's desired output application. The researchers use the internet to gather ideas, concepts, information, and processes on pre-existing software and applications related to the study. Because the internet contains a vast amount of information, the researchers carefully select and filter the information to extract the relevant information for their study.

***In-depth Interview***

Using this research instrument, the researchers were able to determine the potential issues that the constructed platforms may face during the study. Through an interview with a valid specialist in the field, the researchers assess the various weaknesses of the mobile application that might be exploited by users. The researcher used this strategy to get an initial impression of the study's target audience. During the study's evaluation phase, the researchers used this data collection strategy to determine the response and feedback of potential service provider users.

***Survey Questionnaire***

This was given to study participants in order to meet the researcher's objective. The research instrument consists of a series of self-created questionnaires that are used to collect opinions, feedback, and behavior toward the developed web application. The researchers identified the most common needs/problems that every household encounter that require a service provider in the preliminary survey, as well as the percentage of the household that may be able to use the web application in the chosen locale. The researchers used these research tools to determine user acceptance of the developed platforms, thereby confirming the viability of the developed web application.

***Consultation***

The researchers also use the Fact-Finding Technique to collect the data and information required to build the system. By using the manual method, the researchers will gain insight and knowledge that they can apply to improve their transactions.

*Comment:* GENERIC. DISCUSS WHAT YOU REALLY DID

**Phase V. Deploy**

The researchers deliver and demonstrate the system to the intended users.

**Phase VI. Evaluation**

The researchers devised a set of questions for the user evaluation so that they could provide feedback on the system.

*Comment: HOW WILL YOU DO THIS?*

***Software Testing Phase***

The testing phase deals with the assessment of the functionality of the two developed mobile applications based on the actual tests’ input conducted by the researchers. The researchers invited 3 credible testers which are in the IT industry with no less than 5 years of experience that are willing to assess and evaluate the performance of the mobile application in compliance with its specified requirements in terms of the functionalities of the process stated in the objectives.

In order to assess the functionality and the performance of the two developed mobile applications the researchers done the following steps respectively:

1. The Design and Development of Testing tool
2. The Testing method

*Comment: 3 LANG?*

**Table 4.** Sample test sheet. Test Case Id: **SP\_TC 02** Test the Adding Medicine

|  |  |  |
| --- | --- | --- |
| **STEP NO.** | **STEP DETAILS** | **EXPECTED RESULTS** |
|  |  |  |
| 1 | Click the add button (**+**) | It will show the Add modal |
| 2 | Fill up the add modal | It will display the filled-up modal |
| 3 | Click the "**ADD MEDICINE**" button | It will show “Add Medicine Successful.” |
| If all Inputs not are filled – a error message will display |
| 4 | It will redirect to the dashboard | It will display the added medicine |

*Comments: TABLE FORMAT*

**Figure 4**. Technology Acceptance Model. This figure shows the flow of TAM that determines user acceptance based on Quality Factors, Perceived Usefulness, Perceived Ease of Use, Attitude towards Using, Behavioral Intention to Use, And Actual System Use/Experience which the researchers utilized.

*Comment: FIGURE FORMAT*

*Design and Development of the Evaluation Tool*

**Table 6.** Questionnaire for the E-HANAP: A DEVELOPMENT OF MEDICINE AVAILABILITY SYSTEM FOR ALL THE PHARMACY IN CALAUAN LAGUNA.

*Comment: FORMAT*

*Validation of Questionnaire*

Prior to the actual evaluation of the developed software, the validation of the questionnaire is significant prior to its dissemination, it aims to substantiate and authenticate the validity of each question. The researchers used the dichotomous response scaling – “yes” or “no” to determine the validity of the research tool. According to Birkett (2019), “dichotomous scales give an exact, binary answer”, making a clear distinction whether the evaluation tool is valid or not. A face validity was utilized in this specific validation process, which involved the expert looking at the items in the questionnaire and agreeing that the tool is a valid measure of the concept which is being measured. According to Simpson (2018) face validity is use to quickly eliminate shoddy research.

Below are the two validated evaluation tools of for the Web based applications which is used during the evaluation phase of the Web Based application.

*Comment: WHERE?*

DISTRIBUTRION OF QUESTIONNAIRE

**Table 7.** Likert Scale.Likert scale table range score and interpretation – Level of Satisfaction.

|  |  |  |
| --- | --- | --- |
| **Scale** | **Range** | **Verbal Interpretation** |
| 5 | 4.20 – 5.00 | Very Satisfied |
| 4 | 3.40 – 4.19 | Somewhat Satisfied |
| 3 | 2.60 – 3.39 | Neither satisfied nor dissatisfied |
| 2 | 1.80 – 2.59 | Somewhat Dissatisfied |
| 1 | 1.00 – 1.79 | Very Dissatisfied |

*Comment:* WHERE?