PHARMACY/CHEMIST DRUG MONITORING SYSTEM

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A Research Proposal Submitted in Partial Fulfillment for the Requirement of the Award of Bachelor of Business Information Technology of Jomo Kenyatta University of Agriculture And Technology.

DECLARATION

This Research proposal is my original work and has not been presented in any degree in any other University.

Signature …… Date …….

TONUI KEVIN KIPTOO

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This Research Proposal has been submitted for examination with my approval as University supervisor

Signature …… Date ……..

MR. WAWERU STEPHEN

DEDICATION.

I would like to dedicate this system project to my family, friends and classmates for their continued support all through my study.

ACKNOWLEDGEMENT.

I would like to thank the almighty God for this far He has brought me. I would also like to express my sincere appreciation to my supervisor Mr. Waweru for the guidance he has given me and the guidance on improving the system up to the completion of this system project. My appreciation also goes to my parents for the moral and financial support they have given me all through my course study. Lastly I would like to thank my friends and classmattes.

Thank you so much and GOD bless you all.

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PCDMS: Pharmacy/Chemist Drug Monitoring System

ABSTRACT.

The Pharmacy/Chemist Drug Monitoring System is a system that helps pharmacy and chemists not to sell expiry drugs to the local mwananchi who has little or no knowledge concerning drugs and its expiry. The PCDMS allows health experts in pharmacies and chemists to classify drugs in order and be able to get an alert when drugs are almost expiring or have expired. It aims at also reducing wastage of resource and wastage of money used to acquire drugs.

The PCDMS will also help to evaluate the amount of drugs required in a pharmacy or chemist per a particular time so as to reduce acquiring more than needed drugs that will likely take long and expire before consumption. It will also aim at classify those types of drugs that expire faster than the others so that they can be sold fast or rather so that they do not bring in a large number of supply that will end up going to waste.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Expiry of drugs in pharmacies and chemists is a concern to health professionals as the government Department of Health spends a lot of money to buy drugs. The number of drugs which expire in pharmacies and chemists can give an indication of how the drugs are used, and consequently reflect on the disease prevalence for which the drugs are indicated for. Antai and Mutshinda (2010) reported that the number of drugs returned and the time within which they are returned can provide an indication of the use status of a particular drug type and the status for the disease for which the drug is indicated for.

Through a research i conducted on pharmacies and chemists in Nakuru County, expiration of drugs before they are dispensed to patients appears to be a common problem which may result from various factors such as massive orders of rarely used medical products and lack of computer usage system which keep track of the expiry dates. Expiration of drugs is a problem to a system that is already constrained with lack of access to drugs. As pharmacies and chemists receive stock at various times, drugs will commonly have different expiry dates. It is very important for pharmacies and chemists to have a drug expiry monitoring system that will enhance the confidence of the local mwananchi of consuming medicine that is not expired. The pharmacy/chemist drug monitoring system will help reduce selling of expired drugs to its consumers.

1.2 Statement of the problem

Expiration of drugs in pharmacies and chemists could cost them money and lower the quality of service. Expiration of drugs is also harmful to the local mwananchi's health who consumes the drugs. Expired drugs cannot be used beyond expiry date, primarily because the ingredients could change their chemical stability, leading to potential harm to patients, of which the manufacturer cannot be held accountable. Generally, several drugs are short-dated, meaning that they need to be purchased and used within a short period of time. It is therefore important for the Pharmacies and chemists to purchase only drugs that are necessary or that are commonly used per hospital, in order to reduce drugs expiration. In Nakuru county, some pharmacies and chemists experience drug shortages, and only to find that the drugs that are on stock are not commonly used, which further leads to them expiring before they can be dispensed. The pharmacy/chemist drug monitoring system will be implemented to ensure expired drugs are not dispensed and that drugs will not expire before the patient completes their normal course of therapy.

Objectives

Broad objective

The main objective of this study is to develop a project that will contain all the details about the drug expiry dates which will help reduce selling of expired drugs.

Specific Objectives

- Create a system which will help in identify those drugs that are expired in pharmacies and chemists
- Determine the reasons for medicines to expire.
- To determine which type of drugs expires over a short period of time and a longer period of time.
- Determine the financial loss due to the medicine expired.
- Identify other ways of preventing medicine expiry.

Research Questions

1. How will the system automatically detect if a drug is expired or not?
2. What are the reasons for expiry of drugs?
3. What are the financial loss constraints caused by expiry of drugs??
4. Which type of drugs expires faster and which one stays longer?

justification.

The pharmacist or people working in the chemists who will be the users will able to view or find the information about the classification of drugs, examples of those drugs, where they are stored, date of arrival and date of expiry of those drugs. The system will entail and indicator which

shows the user when the drugs are about to expire or have already expired. The drug expiry monitoring system will also be benefitial in saving costs that would have been incurred in having drugs that are expired. This kind of system also saves on time unlike the manual way of determing if drugs are expired or not in the pharmaciee and chemists. It will also reduce health risks to the local consumer as the pharmacists and chemists will be keen on selling exprired drugs to them.

Research scope

This project will focus on the health sector about the expiry of drugs in pharmcies and chemists. The project is aimed at reducing the challenges the pharmacies and chemists is facing in selling drugs that are expired. The goal of this study is to develop a system that is computerized such that the pharmacies and chemists can know which type of drugs is expired without checking manually. This study was done in Pharmacies and chemists in Nakuru county focusing on the past three years where it is a common issue.

Research limitation

Time and financial constraints limited the study to one county. The findings of this research cannot be generalized to other counties because the study was conducted in only one county. The other limitation was that pharmacies and chemists with zero records of expired stock do not reflect the true picture of data collected.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter will contain detailed information about empirical review and studies and previous research or current research being done, Critique the current system, diagrammatic representation of the relationship between the dependent and the independent variables

Pharmacy/Chemist drug monitoring sytem is meant to assist or rather help monitor and keep track of expired and non expired drugs in pharmacies and chemists.

Theoretical Review

The study will rely on theoretical models to determine the impact of drug expiry on pharmacies and chemists achievement. The study will therefore rely on SMs Based Drug Monitoring System, Medication Monitoring System and Drug Dispensing Monitoring System.

SMS BASED DRUG MONITORING SYSTEMS

The Novartis Company developed the SMS-based system for anti-malarial drugs in sub-Saharan Africa. The technology was developed to prevent stock-out of antimalarial drugs in remote areas by taking advantage of the present availability of mobile phones network coverage even in rural areas. The system automatically sends weekly SMS text messages to mobile phones at public health facilities requesting information on their updated stock levels. The major challenge for the effectiveness of this system is that the remote health centers are served by the district hospital

where the automated drug monitoring and ordering system is not in place. Thus even if the SMS from the remote health center will be received will be difficult to be processed since even the district level can get out of stock without notification. This can be considered as a call up on development of information system for drug monitoring and management at the hospital level.

MEDICATION MONITORING SYSTEMS

Medication errors are an important cause of patient morbidity and mortality and excessive costs thus the development of assisting information system is vital in efficient health care provision. Howard et.al (2013) developed a system for maintaining drug information and communicating with medication delivery devices, the system includes software for use in hospital pharmacy and biomedical environments. Also, Zhou (2012) designed and developed the medication error control system which was RFID-based prototype software that can be used to monitor and administer the drug medication in hospital environment. One of the problems with the system is that they are limited to medication error control not extended to pharmaceutical monitoring and management.

DRUG DISPENSING MONITORING SYSTEM

Over the past decade hospitals in developed countries has been assisted by electronic drug management machines. Lester et al. (2000) developed a system for drug and health care supply distribution and replenishment. The system performs drug information transfer, drug inventory management, and drug packaging. Moreover, machines are placed at each dispensing point and electronically connected to central pharmacy department for trucking drug administered to

patients at that particular health care unit. As a result, hospitals have improved to some extent in terms of how drugs are dispensed to patients and the record keeping required by the pharmacy departments Reardon et al (2013) designed a drug distribution system which utilizes a central pharmacy and database to track all prescriptions for sensitive drugs., Information is kept into the database showing all physicians allowed to prescribe the sensitive drugs, and recipients of drugs/medications so as during drug dispensing the system will cross check to ensure that the right doctor prescribes sensitive drugs/medications to the right patients. However, the system is more advanced and suitable to the hospitals with well-established information system network across all hospital units, which is not the case for the Tanzania's hospitals. Also the limitation of drug management and replenishment system is that in public hospitals there are no electronic systems for patient records nor for medical prescription and therefore deploying such a system is not feasible.

Critique of the existing literature relevant to the study.

The current existing literature does not really solve the problem of expiry of drugs as it is still a major problem being encountered with even the existance of the other sytems. The existing literature as seen mainly focuses on the supply and storage of drugs and also its classification but the process is very tedicious as it does not give an alert on when drugs expire. The current literature does not have a proper means to identify the drugs that are about to expire or that have expired and thus it does not solve the drug expiry problem.

My research proposal will aim at creating a system that will classify drugs inorder and give an alert to when the drugs are about to expire or have expired. This will help in solving the problems of selling expired drugs to the local mwananchi and also reduce the losses incurred due to the expired drugs.

Summary

In reference to the systems developed before, the pharmacy/chemist drug expiry monitoring syatem will aim at meeting the needs of the local mwanachi by ensuring pharmacies and chemists are able to monitor the expiry of drugs. This will reduce the consumption of expires drugs by the local mwananchi who are not well equipped with knowledge concerning drugs.

Research Gaps

Some of these studies have been done in other countries which have different operating health environment. PCDMS heps to fill the gaps concerning need to get rid of consumption of expired drugs. There was nees to find out if it will contribute positively or not. This study therefore seeks to fill some knowledge gap in the research literature.

CHAPTER THREE: RESEARCH METHODOLOGY

This chapter presents the methodology that was used to develop the research project. It introduces the process through which collection, analysis and processing of the data collected and used to accomplish the objectives of this research was carried out. It covers research design, target population and sampling techniques. It also lays down the data collection methods, approaches and instruments. The chapter also puts down the validity and reliability tests together with the data analysis tools used.

The Research Designs

The research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data.

Qualitative study approach was used to conduct the study. The research design used was exploratory and descriptive. Descriptive research is a study designed to depict the participants in an accurate way. The three main ways to collect this information are: Observational, defined as a method of viewing and recording the participants. Case study, defined as an in-depth study of an individual or group of individuals.

The Target Population

A population is the entire pool from which a statistical sample is drawn. A population may refer to an entire group of people, objects, events, hospital visits, or measurements. A population can thus be said to be an aggregate observation of subjects grouped together by a common feature

The study was conducted in all pharmacies and chemists around Nakuru. In this study participants are pharmacy and chemist health professionals who are involved in the use of drugs.

A total of 30 health professionals participated in the study. Three participants, namely a nurse and two pharmacists from each of the selected Pharmacies and Chemists in Nakuru participated in the study.

Sampling Frame

The sampling frame refers to the list from which potential respondents are drawn, also known as the working population. According to Saunders et al (2012), a sampling frame is a comprehensive list of individuals or objects from which the sample is to be drawn, which should generically possess certain characteristics representative of the entire population. In this study, the sampling frame was the list of all drugs and date of the drugs expiry obtained from the pharmcies and chemists in the study.

Sample and Sampling Techniques and illustrations

Sampling is the process of selecting a representative group from the population under study. Sampling technique is a scientific or rather statistical method of selecting the sampling units that would offer the requisite estimates with their related margins of uncertaintyThe sampling technique use in this study was simple random sampling. In this case each individual is chosen entirely by chance and each member of the population has an equal chance, or probability, of being selected.

Sample Size

Sample size refers to the actual number of respondents that would be representative of the population under study (Blumberg et al, 2008). The sample size was a total of 30 health professionals participated in the study. Three participants, namely a nurse and two pharmacists from each of the selected Pharmacies and Chemists in Nakuru participated in the study.

The research conducted in depth face to face interviews with all thirty participants and the sample size was reached when data saturation was reached. In this study data saturation was reached when no new information was obtained from the participants.

The Instruments

The instruments are the processes of collecting data and information using several techniques. In the case of my study i used the questionaires as my instruments of collecting data and information. The purpose was to obtain the classification of drugs, the expiry dates of drugs, the reasons why drugs expire and the supply dates of the drugs. The information given is what i Will use to come up with my system.

Interviews.

An interview is essentially a structured conversation where one participant asks questions, and the other provides answers. In common parlance, the word "interview" refers to a one-on-one conversation between an interviewer and an interviewee. I chose health experts who are well equipped with knowledge in the pharmacies and chemists selected. Conduting interviews really helped me in fact finding of information concerning drug expiry.The interview process involved: Determining the pharmacies And chemists to go to and people to interview, establishing objectives for the interview, preparing for the interview, conduct the interview and evaluating the interviews.

Data Collection procedures

The study was conducted over a period of three months from september to December, 2019. The researcher conducted in-depth face-to-face interviews with all selected health professionals. Questions during an interview were not only limited, some questions asked were influenced by the responses of the participants during the Interview.Questions were asked based on the role and involvement of the participants. Each interview session took less than 30 minutes per interviewee. Data were collected over a period of seven weeks.

Data processing and Analysis Methods

The study utilized a quantitative method of data analysis. To enable easy analysis, the results obtained from the interview was first coded as per each variable in each question of the study. Coding involves assigning a numerical value to a non-numerical variable to minimize the margin of error and assure accuracy during the data entry (Collis & Hussey, 2013). The reasons for

expiration given by pharmacists were compared to those given by nurses. Baseline information on budget, i.e. expenditure, and wasteful expenditure was established.

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