
**ANDROID MOBILE APPLICATION FOR MEDICAL RECORDS MONITORING SYSTEM.
A CASE STUDY OF MUWESIGWA PHARMACY MEDICAL STORE.**

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ABSTRACT

The study aimed at android mobile application for medical records monitoring system and it was guided by the following objectives; To analyze the requirements for a record monitoring system, to develop a record monitoring system for managing pharmacy and to test and implement the prototype for management planning in medical store. The study employs qualitative approach and descriptive methods to describe the characteristics of the research variables. It was qualitative in that opinions of the people were required and the researcher contextualized them according to his/her understanding. Quantitative data included annual company reports. The existing system was studied to establish its weak and strong points. The information that was acquired from this study gives the basis for the design of the application. These would help the researchers to show the relationship between the various entities within the system. The major entity components were organized according to the researcher's appropriate classification and relevance. In the database, the tables were used to design corresponding entity or table structure with column names, primary keys, foreign keys if any, column size, constraints on the columns, the data types on these columns and description of each column.

Key words: android mobile application, medical records and monitoring system

Background of the study

Record monitoring practice has always been an organization's fundamental assets. Lacking it, the modern organization basically cannot operate very effectively and efficiently. More and more, records management practice was being seen as a critical business practice which facilitates organizations to establish and validate their business dealings and connected actions. Every institution was

caught up in the making of records in its processes. Therefore, records monitoring practice was one of the byproducts of institutional processes. Collectively with the usually known organizational, past and present purpose, organizations keep records to realize legal needs for their operations and protect the rights of stakeholders

Patients" records are needed every day to record information about the patients" personal particulars, prescriptions and diagnosis for future reference to follow-up patients. The information recorded was ultimately used to substantiate the patients" health record during present and future consultations. The paces at which the records are retrieved and served for this purpose determine the patient waiting time for the services.

Proper filing of patient's medical records facilitates effortless retrieval and ensures reduction patient's waiting time at the hospital and ensures continuity of care. It was therefore, very important, that medical records are always kept in the interest of both the clinician and the patient. The medical folder must always be in the safekeeping of the health facility while the patient enjoys the right of information. Studies in other developing countries have observed their record keeping systems to be inadequate with about half (52.2%) of the records retrievable within one hour (Aziz & Rao, 2002), and a number the records were badly designed and there is use of multiple patient health records by patients (Kerry, 2006).

Statement of Problem

An effective monitoring of medical records was a critical factor in providing capacity for Pharmacy's efficiency, accountability, and transparency and information security. Currently, findings indicate that in Fine Pharmacy there are inadequate records monitoring practice simply because many existing record keeping systems of this Pharmacy were found not designed to collect information on some diseases (malaria, HIV/AIDS, Diarrhea, tuberculosis,

common cold & chickenpox) and medical drugs (paracetamol, amlodipine, atorvastatin, morphine and amoxicillin). As a result, health workers more often than not end up not rendering certain services because the health history of the patient was not contained in medical files. This was owing to the fact that, if the health personnel continue treating patients exclusive of sufficient information about the patients' health conditions the individuals could end up rendering poor health care that may be unsafe to patients' health. For this reason, this study examines records monitoring practice at Muwesigwa Pharmacy medical store Uganda contribute towards bridging the research gap identified in the study of records monitoring practice pharmacies with a view to suggesting effective and efficient ways of meeting this challenge as few research has been done.

Objectives of the Study

1. To analyze the requirements for a record monitoring system
2. To develop a record monitoring system for managing pharmacy.
3. To test and implement the prototype for management planning in medical store

Methodology

Research Design

The study employs qualitative approach and descriptive methods to describe the characteristics of the research variables. It was qualitative in that opinions of the people were required and the researcher contextualized them according to his/her understanding. Quantitative data included annual company reports. The existing system was studied to establish its weak and strong points. The information that was acquired from this study gives the basis for the design of the application.

Target population of study

The target population for this study was the medical records since pharmacies have different records and must be kept carefully to ease management and disease treatment.

Sampling

A sample was an element of the population considered for actual inclusion in the study, or it was a subset of measurements drawn from a population we would interest in. therefore sampling can be defined as selecting or choosing a small portion of the total set of objects, events, persons, which together comprise the subjects of the study.

Sampling techniques

Stratified sampling together with purposive sampling methods would be used as the major sampling techniques, grouping population into different levels. The records sample was divided into distinct, independent levels that can enable the researchers to draw suggestions about specific subgroups like the patients and the organization administrators.

<i>Levels</i>	<i>Total number of people in that level</i>
<i>Patients</i>	<i>10</i>
<i>Company Administrators</i>	<i>3</i>
<i>Casual workers</i>	<i>2</i>
<i>Total</i>	<i>20</i>

Development Methodology

The following were the steps that were to be deployed to fully understand the

current system was being used. These include; requirement identification; design; implementation, testing and validation. However, the development process would be iterative, though it would be depicted as comparing of phases.

Requirements identification

To identify the requirements of the system, various approaches would be used as explained below.

System study and investigation

There would be a thorough study of the existing systems in order to understand the loop holes before developing the application for availing medical record monitoring. This would be achieved by use of Data Collection Methods like questionnaires, interviews, observations, and documentary review.

Data Collection Methods

The researcher would use the following methods during data collection: Observation, Interviewing, Questionnaires and documentary review as our research methods.

Observation

The researcher would move around different departments at the Muwesigwa pharmacy to see how data record was being handled, how records are managed and which methods were in place for producing reports. Through observation the researcher will find out how data was collected and the methods used for monitoring medical records.

Interviews

Oral interviews would be conducted between the researcher and the members of staff of Muwesigwa pharmacy. This would be instrumental in gathering information about the current manual system of record monitoring and its gaps since it gives the researcher a chance to interact with the system users. Different staff members would be asked questions about how useful or tiresome their current medical record monitoring method is if compared to other systems. This helps the researcher to take the decision of developing the standard mobile medical record monitoring system. The researcher would interview about 8 patients and 2 staff members to clearly understand how the current system works.

RESULTS

The system designs

The analysis of the requirements which would be acquired in the requirements identification phase would lead to the development of an application for medical record management.

The Database system would be developed using android studio and the programming frame work of the system would be done using XML, CSS, PHP, and JavaScript. There would be removal of redundancies by normalization of the data in order to get the right material to be entered into the tables to be used for the system.

There would be conceptual database design by having the Entity Relational Diagram and the Entity Relations. There would be also the Logical design where entities, attributes, data lengths would be made to remove the redundancies in the system and duplicates. This would lead to physical database design where java with PHP script would be used to design the app that would enable us get the graphical user interfaces to be used by the system as it is free software. The system design objectives include: Usability, performance, reliability, software architecture and

package.

INTERFACE

Figure: Software Design Block Diagram

System analysis

During system analysis phase, we analyzed and then after designed and developed a new system that was tested and implemented in order to cater for the gaps that were prevailing

System specification

This section contains the functions the mobile app system was expected to perform; these include User requirement, and system requirement.

User requirement

The system should be usability so as to be simple to use by those with average computer skills.

And have the capacity to handle expansion in case of further modification in future.

Functional requirement

The system should deliver information about the pharmacy to the community especially to the pharmacy stakeholders. For example, it should allow registration of new staff and be able to handle the issue of report forms that is, it should be able to generate report cards for the workers.

Nonfunctional requirement

The system should be fast enough and user friendly to satisfy the user's needs.

System requirement

These were requirements needed for the system to give out its functionality.

Hardware requirement

This section discusses the computer hardware that is required for the system to run smoothly

<i>Hardware</i>	<i>Minimum system requirement</i>
<i>Memory</i>	<i>4.00GB</i>
<i>Mobile phone and tab let</i>	<i>4.00GB</i>
<i>Processor</i>	<i>Intel(R) Celeron(R) CPU N3060@1.60GHZ</i>
<i>System type</i>	<i>1.60GHZ 64-bit operating system,X64-Based processor</i>
<i>DVD</i>	<i>4GB</i>

Software requirement

<i>Software</i>	<i>Minimum requirement</i>
<i>Text editor</i>	<i>Android studio code</i>
<i>Web browser</i>	<i>Google chrome</i>
<i>Languages</i>	<i>PHP, Html and CSS</i>
<i>Operating system</i>	<i>Windows 10, mobile phones</i>

System Design Techniques

These would help the researchers to show the relationship between the various entities within the system. The major entity components were organized according

to the researchers appropriate classification and relevance. In the database, the tables were used to design corresponding entity or table structure with column names, primary keys, foreign keys if any, column size, constraints on the columns, the data types on these columns and description of each column.

Testing

It was necessary to test the methods and to make various practical preparations. Tests or pilot studies allow us to identify potential problems in the proposed study or system.

Testing refers to the process of executing the developed System in order to ensure that it conforms to the user requirements and that it is functioning correctly. The goal of testing is to ensure the systems reliability and conformity to the user requirements. It was useful in examining the practicability, reliability, and suitability of the method or system.

Conclusion

Basing on the ending and analysis, an muwasigwa pharmacy system was a venture to invest worth taken seriously and embraced, there was a lot of benefits to be realized there in. Both the staff and the entire community would benefit from the system since everything is done electronically and it was time saving.

Recommendations

As the system designers and implementers, we made the following recommendations on how the system should be used. The system should be well maintained and protected from unauthorized users.

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003. p. 30