AUTOMATED CLINIC RECORD MANAGEMENT SYSTEM: A CASE STUDY OF AHMADU BELLO UNIVERSITY SICK-BAY

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Abstract: This study was carried out to introduce the use of an automated clinic record management system in clinics, and has chosen Ahmadu Bello University Sick-bay as the case study for the first implementation with the aim of improving their services especially in this digital era. A qualitative research was adopted and the instruments used for the study are interview, observation and questionnaire. Where some questions were raised by the researcher such as, what are the challenges associated with the use of the manual/traditional record management system in the clinic. How to improve on the current record managements system to save time and minimize human error in the process of the records? How to provide more privacy to patients' records and information in the clinic? Where Fifteen (15) respondents were randomly chosen from both the clients and staff of the clinic. And at the end of the research, the findings are analyzed and presented to promote the services in the clinic.

Key Words: automated, record management system, clinic records.

INTRODUCTION:

With the advent of computers and its related technology, in which everything needs to be done efficiently and effectively the existences of Automated Clinic Record Management System (ACRMS) become necessary. The use of an ACRMS can enhance the services and also the work flow of all activity that happens in a clinic, as it can helps in reducing the workload of the medical staff, the number of man power needed and also make clinic management become more manageable and easier to control. These benefits could not end on the clinic professionals, but also affect the patience, in which patience's records can easily be retrieved from the system in case of emergency.

Olatokun W.M and Gbinedion L.J (2009) on the Adoption of Automatic Teller Machines in Nigeria, makes life easier to people because in the absence of this development people can only withdraw money from their account only during working days but during public holidays you have no access. So automation machine has been a relief to bank customers. Likewise in the health sector if this automation becomes successful it will be an easier way to retrieve patient's records without any difficulty. And it will also solve the problem of misplacement or missing record.

STATEMENT OF THE PROBLEM:

The manual system of record keeping and filling system in Nigerian clinics has over the years proved inefficient. There had been incident of misplaced documents, not able to retrieve long consult patients' records, loss of records or files, alteration of information etc, which mostly result in unnecessary delay of treatment and even sometime leads to the death of the patient. This problem persisted for a very long time and is worrisome to the clinic management. The researcher came up with the best option to tackle this problem, and hence the need to carry this research.

Research Questions:

This study was carried out to provide solution to the following research questions:

a. What are the challenges associated with the use of the manual/traditional record management system in the Ahmadu Bello University Sick-bay.

b. How to improve on the current record managements system to save time and minimize human error in the process of the records.
c. How to provide more privacy to patients' records and information in the clinic.

SCOPE OF THE STUDY:

The general scope of this study will be focused on Ahmadu Bello University sick bay. While the specific scopes are as follows:-

a. A computer base program will be introduce for the management of patients records in the clinic.
b. The system (program) can either be locally connected within the clinic or can also be hosted on the internet for widely interconnection.
c. The program will have three (3) interfaces (Modules) which are as follows:-
    i. Doctor's Interface – through this interface, the doctor can access his/her account to create a schedule for the week, attend to his scheduled patients and also update their medical records after diagnosing. This interface also provides all details of the doctor, located clinic, specialization and shifting time, from which a patient can also schedule an appointment.
    ii. Patient's Interface– from this interface patient account can be accessed to view his medical records or print them out when need be.
    iii. The Admin Interface –the administrator has the full control over the system, from which he can create, read, update and delete any record or information from the system.

REVIEW OF RELATED LITERATURES:

This section review some related literature in the area of the study, from which the researcher tried to identify, locate, read and evaluate some previous studies, observations, theories, opinions and comments, which are arranged in the following headings:

Diffusion of innovation theory:

Diffusion of Innovations is the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas. Communication is a process in which participants create and share information with one another in order to reach a mutual understanding. This definition implies that communication is a process of convergence (or divergence) as two or more individuals exchange information in order to move toward each other (or apart) in the meanings that they ascribe to certain events. We think of communication as a two-way process of convergence, rather than as a one-way, linear act in which one individual seeks to transfer a message to another (Rogers and Kincaid, 1981).

In fact, much diffusion research involves technological innovations so Rogers (2003) usually used the word "technology" and "innovation" as synonyms. For Rogers, "a technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome"

Previous studies that adopted this theory:

As mentioned, several scholars from different disciplines have used this theory in investigating, analyzing and exploring why new ideas (innovations) are adopted and why others fail.

This section has discussed some of the previous studies that used the DOI Theory to explain how innovations (new ideas) are developed, processed and implemented in organizations.

A study conducted by Olatokun W.M and Gbinedion L.J (2009) on the Adoption of Automatic Teller Machines in Nigeria: An Application of the Theory of Diffusion of Innovation, the main objective of knowing what could be done to prevent the inhibition surrounding the use of Automatic Teller Machines in Nigeria, the researchers have use the five attributes of innovation according to Rogers (1995) - relative advantage, compatibility, complexity, trialability and observability, in finding out the degree of influence attitude and the intention of the people to use the technology, hypothesis are designed in testing each of the constructs. The data collection instrument used was

a structured questionnaire administered to ATM customers of the selected 14 banks. While the findings of the study state that, Relative Advantage of using ATMs; how hard it was to use ATMs, how compatible ATMs were with the lifestyle of the users; how much has been registered (observed) about ATMs by the users and whether ATMs could be tested before consistent use, were issues that influence users' attitude towards intention to use ATMs. It also states that, the Attitude of an ATM user would later affect his/her intent to use an ATM. Since Observability had the greatest impact on attitude, it is important for banks to give the right impression about ATMs. This could be in terms of locating ATMs in hidden places so that non adopters could observe others use ATM before adopting it themselves.

Kiplang'at J. and Ocholla D.N (2005) also conducted a study titled "Diffusion of Information and Communication Technologies in communication of agricultural information among agricultural researchers and extension workers in Kenya" The paper reports on the findings of a study that investigated the diffusion of Information and Communication Technologies (ICTs) in communication of agricultural information among agricultural researchers and extension workers in Kenya. The study focused on the public agricultural sector and covered the Kenya Agricultural Research Institute (KARl) and the Ministry of Agriculture and Rural Development (MoARD). A survey research method comprising a self-completed questionnaire and a structured interview schedule was utilized to gather data from the respondents who comprised of I59 agricultural researchers, 138 extension workers and 59 key informants. This was supplemented by observation and document review.

Ibrahim M.A and Sadiq S.M (2012) also conducted a study on Mobile Banking Adoption: Application of Diffusion of Innovation Theory; The objective of the study was to investigate a set of technical attributes and how they influence mobile banking adoption in a developing nation, like Saudi Arabia. The study uses diffusion of innovation as a base-line theory to investigate factors that may influence mobile banking adoption and use. More specifically, the objective of the research was to examine the potential facilitators and inhibitors of mobile banking adoption. The researchers have uses hypothesis in testing each of the Rogers (2003) attributes of innovation in related with the adoption of mobile banking. Survey instrument was used for the research, in which 20 questionnaires are randomly shared among some selected mobile banking users; findings also suggest that banks in Saudi Arabia, should offer mobile banking services that are compatible with various current user requirements, past experiences, lifestyle and beliefs in order to fulfill customer expectations. With better mobile banking support and provision of variety of services, the more useful customers perceive mobile banking to be and to increase their level of adoption. Hence, bank's attention should focus on understanding customer behavior and designing reliable mobile banking systems that will meet their needs and provide useful and quality services. In addition, banks should focus on communicating information that emphasizes the relative advantage and usefulness of mobile banking compared to other banking channels like physical presence to the bank or using ATM machines. Banks must seek to reduce risk perceived by their customers by offering specific guarantees protecting them and taking their complaints seriously and urgently.

Automated Clinic Record Management System and the DOI theory:

There are always reasons for introducing an innovation in an organization. As rightly pointed out by Rogers (1995) the innovation process begins with agenda setting where one or more individuals in an organization identify an important problem and then seek an innovation as a means of coping with the problem. Rogers (1995) further observes that the problem usually emanates from a performance gap which is the discrepancy between how the organization is performing in comparison to its potential. He is of the view that the discrepancy is identified by members of the organization and is a strong force that compels them to search for an innovation to solve the identified problem.

For example, the introduction of an Automated Clinic Record Management System in the Ahmadu Bello University Sick-bay in which patients' records being collected manually. When apply the five attributes of the Diffusion of Innovation theory to the planning and implementation of the project (Automated Clinic Record Management System), will be of a great benefit to the society.

1. **Relative advantage:** knowing some of the core benefit of the system compare to the old system.
2. **Complexity:** knowing how relatively the new proposed system will be difficult to understand and use.

3. **Compatibility:** how relevance the new proposed system will fit in to the organization.
4. **Observability:** how widely and quickly will the stockholders identify the benefits of the new proposed system.
5. **Trialabilty:** what level of risk is attached to the stockholders trying the efficiency of the system?

METHOD ADOPTED FOR THE STUDY:

This study has adopted a qualitative method of research. A qualitative research has been defined as "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (Strauss & Corbin, 1990:17). According to Creswell (2003), a qualitative research takes place in the natural setting. He states that the qualitative researcher often goes to the site (office) of the participants to conduct the research. This enables the researcher to be more detailed about the individual or place and be highly involved in the actual experiences of the participants.

Population of the Study:

Abdulkareem (2006 et al.) defined population as the aggregate of all observations of all interest to the researcher. The population of a research is the body of research subject being focused. Usually this is expressed in terms of number of persons being addressed by the researcher. However, in this study the population is not much and never small and therefore, it includes all the clients and staff of the Ahmadu Bello University Sick-Bay, which include the professionals, paraprofessionals and the non-professionals.

Sampling and Sampling Procedure:

The study sample according to Aina (2007) is the selection of some part from the study's population of interest. However, for this study, the researcher carefully selected Seven (7) from the clients meet in the clinic and two (2) from the professional staff, four (4) from the paraprofessional staff and two (2) from the non-professional staff as representative so that the outcome resulting from data obtained from them will be accurate, reliable and adequate for this research.

Table 3.1: Sampling size

S/N	Category	Sample Size
1	Clients at the clinic	7
2	Professional Staff	2
3	Paraprofessional staff	4
4	Non- Professional Staff	2
Total		**15**

Instrument used for Data Collection:

The instruments used in collecting data for this research are interview, observation, existing document review and a questionnaire.

Data Analysis:

Data collected for this study is discussed using the descriptive analysis, in which the researchers tries to analyze and explain all the data (responses) gathered from the conducted interview, observation, existing document review and questionnaire on the course of this study.

The current manual records keeping system used in the clinic:

It was observed that the current record management system being used in the clinic was the manual method, where all patients' records and information are being collected with papers and pens and kept in paper file folders or box files. This system exhibits some strengths and weaknesses. The strength of this system is; patients and staff records are properly kept in box files which are then stored in office file cabinets, the system is also easy to use because it does not require any training of the user. Weaknesses of the current system are; it takes a lot of time to retrieve the required records especially when the files are big, updating of patients records is tire some, files are

easily lost or misplaced in cabinets, lack of data security, manual calculation are vulnerable to errors and big storage space is wasted where file cabinets sit.

Data analysis and discussion:
Under this section, the researcher tries to analyze and explain all the data (responses) gathered from the conducted interview, observation, existing document review and questionnaire on the course of this study.

Challenges of the Current System:
Base on the responses and observations on the current manual system of record keeping and filling in the clinic, the following issues are experienced;

a. Inefficient record management.
b. Misplacement of patients documents,
c. Not able to retrieve long consult patients' records,
d. Loss of records or files alteration of information which normally result in unnecessary delay of treatment.

Proposed record management system for the clinic:
Most of the respondents suggest an automated system for the clinic, in which a computer program and other related technology can be used in the management and operational functions of the clinic in other to benefit and experience the advantages of technology in the digital era.

Benefits of the proposed system:
It was also observed from the responses on this study that, the introduction of an automated record management system, in which computers will be used in the management of patents records and information in the clinic will leads to the following progress;

a. More accurate record management, time saving, and easy retrieval of patient's information will be observed.
b. The computer program can also be a web base that will enable a quick access to patient's record globally in case of emergency.
c. Computer program can also provide adequate security to patients records in which only authorize users can have access to the system.
d. Computer program can also provide an adequate schedule for both the doctors and the patients of the clinic, in which an appointment has to make over the internet by the patient before visiting the doctor.

System User Requirements:
The system is expected to meet the following requirements;

a. Should allow secure entry of patient records
b. Retrieval of these records should be done with ease
c. Should allow users to enter new records
d. Also the ability to edit, search, delete the existing records.
e. Should be able to create hard copies as well as system backup for all records in the system.
f. Data entered by users, should be fast, give instant responses to inquiries.
g. Should provide security for data entered through authentic users to the system only.
h. Should display an error message to the user each time an error is encountered by the system during data entry.
i. Should output patients' records, diagnosis records and who carried out the particular event.

MAJOR FINDINGS AND CONCLUSION:
The application of computer in our health sector is meant to improve on or overcome the lapses of the traditional method being used in our Nigerian clinics. In general, the proposed system is an automated record management system, for efficient patient's data management. With various interfaces which automate patients' data capture and review that is kept in the database, the system will onlyallow authorized users to perform specific duties such

as; inserting or adding patients' records, deleting a record, editing and searching through the database. With the proposed system, problems such as records misplacement, data redundancy and inconsistencies, difficulty in updating the existing data, illegal access to data and time delay in processing data will easily be handled by the system.

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