Design and Development of an Orphans Record System

Conference Paper · October 2018

CITATIONS
0

READS
4,601

4 authors, including:

Muawiyya Adam Haruna
Abubakar Tafawa Balewa University
1 PUBLICATION **0** CITATIONS
SEE PROFILE

Kamaluddeen Musa Yashi
Abubakar Tafawa Balewa University
1 PUBLICATION **0** CITATIONS
SEE PROFILE

Sumaiya Abdulganiyu
1 PUBLICATION **0** CITATIONS
SEE PROFILE

Nigerian Journal of Management Technology & Development
ISSN: 2006-1676 *Volume 8, Number 2* *December, 2017*

Design and Development of an Orphans Record System

[1]Haruna, Muawiyya Adam, [2]Yashi, Kamaluddeen Musa, [3]Zakiya, YahayaShehu, and [4]Abdulganiyu, Sumaiya
[1,2,3&4]Department of Management and Information Technology,
Abubakar Tafawa Balewa University, Bauchi. Email**: muawiyyahadam@gmail.com**

Abstract
Orphans Record System is an automated and computer-based record system use to capture, process, manipulate, organize orphans data and generate timely, accurate and regular information. This study aimed to design and identify the benefit of the development of a computerized Orphans Record System, a case study of Bauchi State Orphans and Vulnerable Children Agency, to capture the orphans and vulnerable children (OVCs) information. The system must enable administrators to make appropriate and accurate decisions. To achieve the goals of the study, a questionnaire was developed and distributed on a random sample of 45 employees at the Bauchi State Orphans and Vulnerable Children Agency. Data for this study were also collected by means of interview and observation. The design of the system model was accomplished by use of use case diagram, sequence diagram, flowcharts, architectural design, and entity relationship diagram. The paper proposes further research by interested researchers.
Keywords: *Orphans, Record, System*

I. Introduction
Computerization is the activity of facilitating or automating procedures or activities by means of electronic computer (Kidd, 2016). A computerized system is a computer system with a purpose. Riganati (2012) said when we talk about a computer system; we are simply referring to the hardware and software that comprise the computer system. But when we talk about a computerized system, we are referring to a function (process or operation) integrated with a computer system and performed by trained people (Riganati, 2012). The world is moving at an unimaginable speed in the area of information use and dissemination. According to Olaniyi (2010), with the use of Information technology, knowledge and information can be transferred and cross-fertilized in real time. According to Lucey (2005), relevant information increases knowledge, reduces uncertainty and is usable for the intended purpose.

Management information system provides a valuable time-saving benefit to the employees and do not have to collect data manually for filing and analysis. Instead, that information can be entered quickly and easily into a computer program and access to the information needed is faster (Nath & Badgujar, 2013). Laudon and Laudon (2010) stated that Management Information System (MIS) is a group of interrelated components that work collectively to carry out input, processing, output, storage and control actions in order to convert data into information products that can be used to support forecasting, planning, control, coordination, decision making and operational activities in an organization. Management information systems are distinct from regular information systems; they are used to analyze other information systems applied in operational activities in the organization (Asabe, Oye & Monday, *2013*).

The issue of an orphan child is one that brought a lot of worries and concern in recent times. It is an issue which is very prevalent in Nigerian society as many adolescent children fall victims. Orphans do not have siblings or any other form of relatives, home or identity. For these reason they lack the usually ambiance enjoyed in the family circle as well as the basic amenities of life and are more or less neglected by the general public (Asabe, *et al*, 2013**)**.

Inaccuracysince the record are in written forms there are bound to be duplication of information, which can result to inconsistency as regard to the orphans and vulnerable children record and information.

Therefore, Orphanage information System is central to the management of orphanage institutions, they are particularly valuable where records of orphans and their transaction are needed to be kept for future use (Asabe, *et al, 2013*). They also offer flexibility in accessing and retrieving of information. This paper work will provide an orphanage management system that will change the conventional manual management with a computerized management system.

Despite government incentives, Bauchi State Orphans and Vulnerable Children Agency (BASOVCA) are still mired in paper documents, avoiding the switch to electronic client records. This technique is prone to data error and data safety issues. The agency also encountered the following problems; among which include lack of security, data redundancy and inconsistency, poor records keeping, uncertainty about the accuracy of recorded information, and the rate at which the work is being carried out is slow, therefore information is gotten very late.

In a related study by Logan (2015), these practices (paper-based operations) are facing a number of challenges by relying on paper documents – regardless of whether their practice is a hybrid of some paper documents and some electronic records, or solely paper-reliant. These challenges can be broken down into accessibility, productivity and security.

According to Nasir (2008), the problem of correcting and amending is also an insolvable problem as there is eraser that can conveniently erase text written in ink without leaving any trace. On the other hand, writing with pencil will expose the records to unauthorized changes that may not be detected.

In addition, it is nearly impossible to accurately account for each person who accesses a paper-based file and audit their use of that record. This means individuals can access records without permission and make copies of documents without anyone knowing (Logan, 2015).

These are just some of the challenges that are presented to practices relying on manual records system. Understanding these roadblocks is an important step towards reducing labor costs and improving quality of care for your patients, while keeping your records secure and accessible.

II. Literature Review

Record System

Records as defined by the American Heritage Dictionary (1980), and cited by Onifade (2004), are 'information or data on a particular subject collected and preserved'. This definition implies that any processed or unprocessed datum that is collected and kept for future use constitutes a 'record'. According to Federal Court Practice Note CM6 E-records can be electronically stored information – an electronic document or component of information that was originally created using a computer system, software application or database.

Systems are composed of interrelated parts or sub-systems and the system can only be explained as a whole (Mohammed & Maifata, 2016**)**. This is known as holism or synergy. Holism states that any whole is more than the sum of its individual parts.

Information may be considered as record knowledge that may be useful to some decision makers and this record knowledge may be found in such sources as inventory reports etc. information is the corner stone of every establishment, especially where business, education institutions and industries have entered the age of computer technology (Asabe *et al,* 2013). According to Business Dictionary (2016) record system is referred to as systematic procedure, by which the records of an organization are created, captured, maintained, and disposed of. This system also ensures their preservation for evidential purposes, accurate and efficient updating, timely availability, and control of access to them only by authorized personnel.

Jessup and Valacich (2008) stated that information system is a system which stores information and data and also makes these available to users. Mainly, information systems are designed to meet certain goals and the performance of certain function, and they interrelate with other components of the organization. The major reason for the establishment of an information system is to process input, maintain data files of the organization and produce information, reports and other outputs for

management use. Technically, information systems consist of other interrelated sub-systems, which include hardware, software, personnel and databases (Jessup & Valacich, 2008).

An Information System (IS) is a discipline whose activities are devoted to processing (capturing, transmitting, storing, retrieving, manipulating, and displaying) information (O'Brien, 2004). Information System is implemented within an organization for the purpose of improving the effectiveness and efficiency of that organization. Capabilities of the information system and characteristics of the organization, its work system, its people and its development and implementation methodologies together determine the extent to which that purpose is achieved (O'Brien, 2004).

III. Proposed ORS

General Analysis of the Existing System

This analysis involves the breaking down of the system into its sequences, and the existing system in this case is a manual system in which records were kept based on the use of file cabinets. This will enable the organization to know a little about the child and also how to arrange for their assistance and also to know their home address in case of any unforeseen circumstances. The reason why this method is less effective is that the data are not collected completely and the information written in books and kept for future reference in file cabinet which is prone to disasters such as fire incident, floods and theft that would lead to loss of data and information completely. Getting a copy of records means rewriting; this causes the entry of data to be too slow.

Input Analysis

In the manual system, information about orphans were entered manually by the information officer which are put together daily in a file and stored in the file cabinet. This information includes orphan's name, address, age, sex, and type of orphan. Since it is required that when a dairy has been filled with records, it will be kept for reference, for a certain period of time then there is the need to have large space for keeping these records.

Process Analysis

The information given by the OVC or his/her guardian or mined by the agency are collected and recorded by the registration officer, so also analyzed it to certify that the OVC have met the necessary requirement. Process is the procedure of clearing the OVCs by the approved staff of the agency; they could be admin, record officer and warden. The agency messenger will have to carry the filled form from one office to another for documentation.

Output Analysis

The output from the system is a hand written report is sourced from the filled form and have it stored in files or the output of the system is a filled form that is approved by the authorized persons.

Feasibility Analysis

Feasibility study was conducted once the problem was clearly understood. Feasibility study is a high level capsule version of the entire system analysis and design process. The objective is to determine how quickly and at the minimum expense how to solve the problem and to determine how the problem is solved. The system has been tested for feasibility in the following ways.

i. **Technical feasibility:** A study of function, performance and constraints may affect the ability to achieve an acceptable system so that necessary function and performance are achieved within the constraints uncovered during system analysis.

The software developed for the automation of ORS is platform independent, so the project is technically feasible.

ii. **Operational feasibility:** The purpose of this project is to develop software named ORS which facilitates quick allocation process. The activities of the system such as data entry, information retrieval, updating and deletion of records from various tables etc. are made easily. All the operations of this project are trained in this area, so this project is operationally feasible.

iii. **Economic feasibility:** Economic analysis includes a broad range of concerns that include cost benefit analysis, long term

cooperative income strategies, cost of resources needed for development. In existing system they had to maintain a large number of books/registers which are a costly affair. This can be avoided by putting the data in the computer format that is cheaper and reliable. Since the cost of resources for development of the system satisfies the organization, the software is economically feasible.

Research Question 1: What is the existing record system used by BASOVCA?

Table 1: To analyze the existing record system use by BASOVCA

S/N	Questions	X	f	fx	$\bar{x}$
1	BASOVCA uses manual system of record management				
	Strongly Agree	5	35	175	
	Agree	4	5	20	
	Undecided	3	0	0	4.88
	Disagree	2	0	0	
	Strongly Disagree	1	0	0	
2	Manual system does not enables report printing				
	Strongly Agree	5	25	125	
	Agree	4	2	8	
	Undecided	3	3	9	4.05
	Disagree	2	10	20	
	Strongly Disagree	1	0	0	
3	File cabinet is one of the most significant tools in manual system				
	Strongly Agree	5	34	170	
	Agree	4	5	20	
	Undecided	3	1	3	4.83
	Disagree	2	0	0	
	Strongly Disagree	1	0	0	
4	Records can be retrieved easily using manual system				
	Strongly Agree	5	0	0	
	Agree	4	5	20	
	Undecided	3	2	6	1.80
	Disagree	2	13	26	
	Strongly Disagree	1	20	20	
5	Manual is more convenient than automated system				
	Strongly Agree	5	10	50	
	Agree	4	5	20	
	Undecided	3	0	0	2.75
	Disagree	2	15	30	
	Strongly Disagree	1	10	10	
	Grand Mean				3.66

Source: Field survey, 2017

Data presented in Table 1shows the response of respondents in respect to the research question on analyzing existing record system used at BASOVCA. The analysis carried out indicated that items 1 – 5 from the above table have the mean scores of 4.88, 4.05, 4.83, 1.80 and 2.75 respectively. The grand mean score of 3.66 falls within the range of the criteria scale of 3.50 – 4.49. Therefore, the grand mean of 3.66 indicates that, respondents agree BASOVCA uses manual system of record management.

Research Question 2: What are the problems associated with the current system being used by BASOVCA?

Table 2: To determine the problem associated with the current system being used by BASOVCA

S/N	Questions	X	f	fx	$\bar{x}$
1	There is inefficiency in manual record system				
	Strongly Agree	5	20	100	
	Agree	4	10	40	
	Undecided	3	2	6	3.95
	Disagree	2	4	8	
	Strongly Disagree	1	4	4	
2	I feel unsecured using manual record system				
	Strongly Agree	5	23	115	
	Agree	4	5	20	
	Undecided	3	2	6	3.90
	Disagree	2	5	10	
	Strongly Disagree	1	5	5	
3	There is inconsistency in manual record system				
	Strongly Agree	5	25	125	
	Agree	4	12	48	
	Undecided	3	0	0	4.43
	Disagree	2	1	2	
	Strongly Disagree	1	2	2	
4	There is data redundancy in manual system				
	Strongly Agree	5	20	100	
	Agree	4	10	40	
	Undecided	3	3	9	4.03
	Disagree	2	5	10	
	Strongly Disagree	1	2	2	
5	Manual system is not cost effective				
	Strongly Agree	5	25	125	
	Agree	4	5	20	
	Undecided	3	5	15	4.25
	Disagree	2	5	10	
	Strongly Disagree	1	0	0	
	Grand Mean				4.11

Source: Field survey, 2017

Data presented Table 2 shows the response of respondents in respect to the research question to determine the problems associated with the current system being used by BASOVCA. The analysis carried out indicated that items 1 – 5 from the above table have the mean scores of 3.95, 3.90, 4.43, 4.03 and 4.25 respectively. The grand mean score of 4.11 falls within the range of the criteria scale of 3.50 – 4.49. Therefore, the grand mean of 4.11 indicates that respondents agree that there are problems associated with the current system being used by BASOVCA

Research Question 3: Why is it necessary design and develop a computerized system driven by a database system to capture OVC information at BASOVCA?

Table 3: To design a computerized system driven by a database system to capture OVC information at BASOVCA

S/N	Questions	X	f	fx	$\bar{x}$
1	The software is cost effective				
	Strongly Agree	5	20	100	
	Agree	4	10	40	
	Undecided	3	5	15	4.13
	Disagree	2	5	10	
	Strongly Disagree	1	0	0	
2	The system should only be access by authorized user				
	Strongly Agree	5	33	165	
	Agree	4	7	28	
	Undecided	3	0	0	4.83
	Disagree	2	0	0	
	Strongly Disagree	1	0	0	
3	I feel secured using computerized system				
	Strongly Agree	5	25	125	
	Agree	4	5	20	
	Undecided	3	2	6	4.08
	Disagree	2	4	8	
	Strongly Disagree	1	4	4	
4	Automated system is highly reliable				
	Strongly Agree	5	27	135	
	Agree	4	10	40	
	Undecided	3	0	0	4.50
	Disagree	2	2	4	
	Strongly Disagree	1	1	1	
	Grand Mean				**4.39**

Source: Field survey, 2017

Data presented in Table shows the response of respondents in respect to the design of computerized system driven by a database system to capture OVC information at BASOVCA. The analysis carried out indicated that items 1 – 4 from the table have the mean scores of 4.13, 4.83, 4.08 and 4.50 respectively. The grand mean score of 4.39 falls within the range of the criteria scale of 3.50 – 4.49. Therefore, the grand mean of 4.39 indicates that respondents agree that computerized system driven by a database system to capture OVC information at BASOVCA should be design

Main Actors

Orphans' RS is currently involves four main types of actors these are: Orphans, Vulnerable children, Record officers and Agency administrators.

i. **Orphan actor**: this type of actor includes all the orphans whose parents are death. These actors include paternal, maternal and double orphans.

ii. **Vulnerable children:** these are actors who were neglected by their parents or less privilege children.

iii. **Record officer:** this will be a member of BASOVCA who will be in charge of recording and operating the system.

iv. **Agency Administrators:** these are BASOVCA staffs who are responsible for

application approval, manages orphanages, manages users and store record.

Use Case Diagram of the Existing System

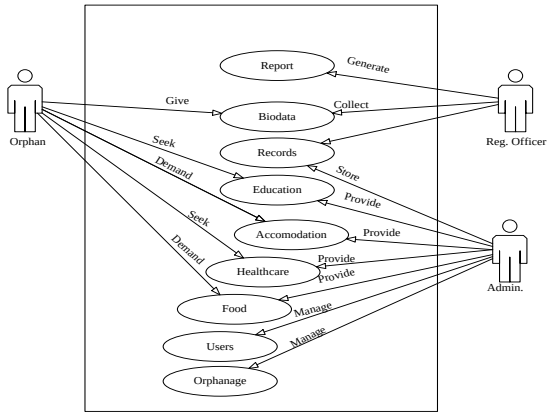
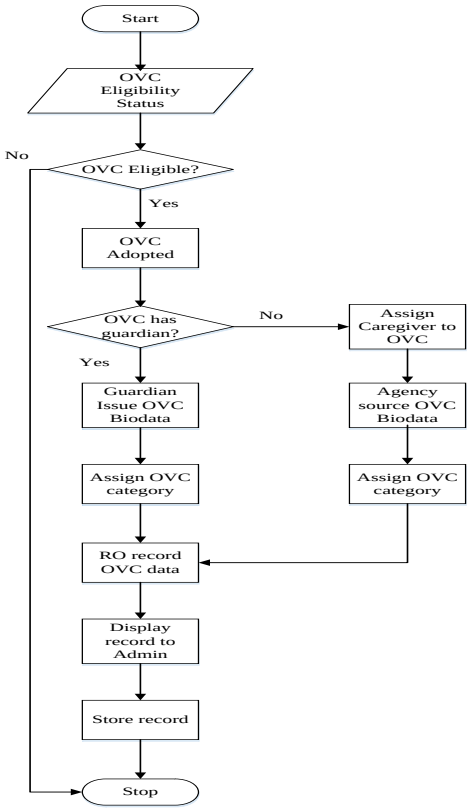


Figure 1: *Use case Diagram of the existing system*

Flowchart Diagram for the Current System

A flowchart is a visual representation of the sequence of steps and decisions needed to perform a process. Each step in the sequence is noted within a diagram shape. Steps are linked by connecting lines and directional arrows. This allows anyone to view the flowchart and logically follow the process from beginning to end.



Problem of the Existing System

The problems of the existing systems are so numerous to mention but a few:

1. Inefficiency in record keeping: BASOVCA record and process its resources based on manual and filling system which is very cumbersome and fraught with delays.
2. Inaccuracy: since the record are in written forms there are bound to be duplication of information, which can result to inconsistency as regard to the orphans and vulnerable children record and information.
3. Database: BASOVCA does not have a centralized database for proper record keeping, that is, most of the records are kept in pieces which most often results to BASOVCA losing its relevant document.
4. Substandard
5. Inconsistent

Effort Aimed at Solving the Problems Facing the Existing System

Having itemized the problems facing the existing system, there is need for an alternative system. This alternative system is a computerized system that will obviate the problem facing the existing system. The need for this system cannot be emphasized as it is aimed at achieving;

a. Effectiveness and efficiency by reducing work intensity
b. Accuracy of computation and record keeping
c. Centralized database
d. Speed optimization and reduced use of paper
e. Ease of update and maintenance of operation

System Design Standard

This is the process or art of defining the architecture, components, modules, interfaces and that for a system to satisfy specified requirements. This

comprises of tools and methods especially diagrams to analyze the design such as class diagrams, entity relationship diagrams (E-R Diagram), and flowcharts diagrams. They help in identifying the major entities and their attributes as well as relationships between entities.

Input Design

Input refers to the elements of data that are keyed into the computer for processing. For the purpose of this project, a form called an orphan entry form will be design for the purpose of entering the orphan's data.

Output Design

This section explains the graphical user interface, menus, forms, reports, and output that can be obtained when the program is executed. Output is generally referred to as the result that is generated by the computer system. This system will be capable of generating and printing various reports through program generators in different formats.

The Model to be used

The methodology to be adopted in this project is Waterfall Model. The waterfall model is a sequential design process, used in software development processes, in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of requirement (analysis and specification), design, implementation, testing, deployment and maintenance.

The waterfall development model originates in the manufacturing, construction industries highly structured physical environments in which after-the-fact changes are prohibitively costly, if not impossible. Since no formal software development methodologies existed at the time, this hardware-oriented model was simply adapted for software development.

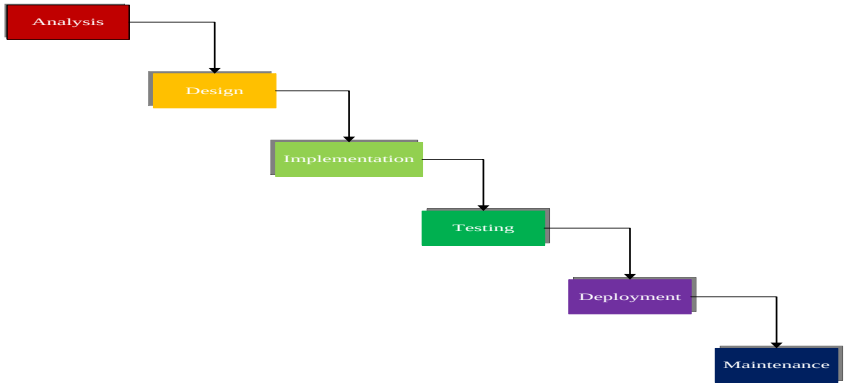


Figure 3: *Waterfall Model*

Sequence Diagram of the Proposed System

A Sequence diagram is an interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario.

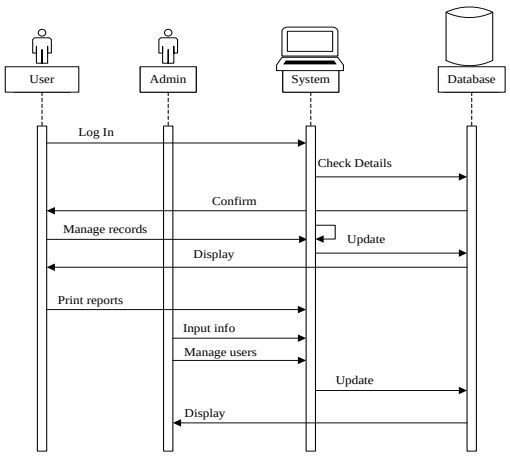


Figure 4: *Sequence Diagram of the Proposed System*

Architectural Design of the Proposed System

Software architecture involves the high level structure of software system abstraction, by using decomposition and composition, with architectural style and quality attributes. A software architecture design must conform to the major functionality and performance requirements of the system, as well as satisfy the non-functional requirements such as reliability, scalability, portability, and availability. The proposed system is made up of 3-tier architecture explained below

a) **Front end/client server:** Provides interface for the Administrator, RO and the caregiver, the front end consists of the default page or home page, the administrator page and the user login page.
b) **Middle Tier:** The middle receives data from the front end, does further validation and then sends the logic for the validation. Here includes searching the database to display user status. Here, asp.net server is used.
c) **Back end:** The back end of this application is the database it holds all the information of admin/RO/OVC/caregiver. Here Microsoft SQL will be used to create the database.

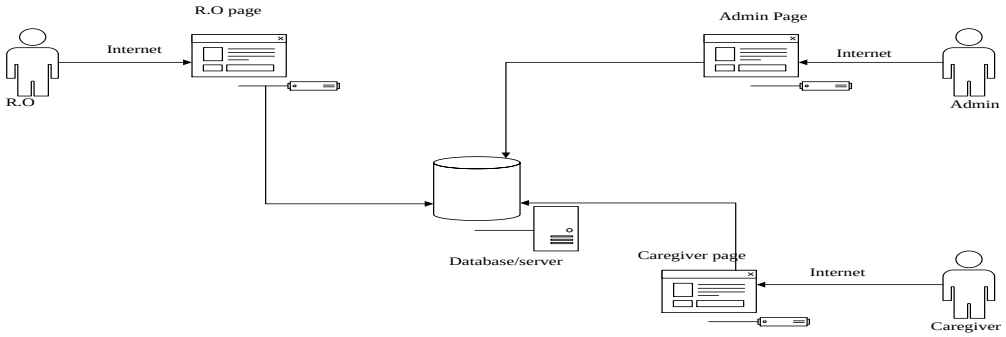


Figure 5: *Architectural Design of the Propose System*

The Database

A database is an organized electronic collection of similar records. The data are typically organized to model relevant aspects of reality in a way that supports processes requiring this information, for example, modelling the availability of rooms in hostels in a way that support finding a hostel with vacancies. A table on the other hand, (in a relational database or a flat file database) is an organized set of data elements (values) using a model of vertical columns (which are identified by their names) and horizontal rows, the cell being the unit where a row and column intersect. A table has a specific number of columns, but can have any number of rows. Each row is identified by the values appearing in a particular column subset which has been identified as a unique key index.

E-R Diagram (Entity Relationship Diagram)

The Entity Diagram which is popularly known as E-R Diagram is a logical and graphical representation of the overall structure of the database. The diagram below shows the logical structure of the database for the proposed system.

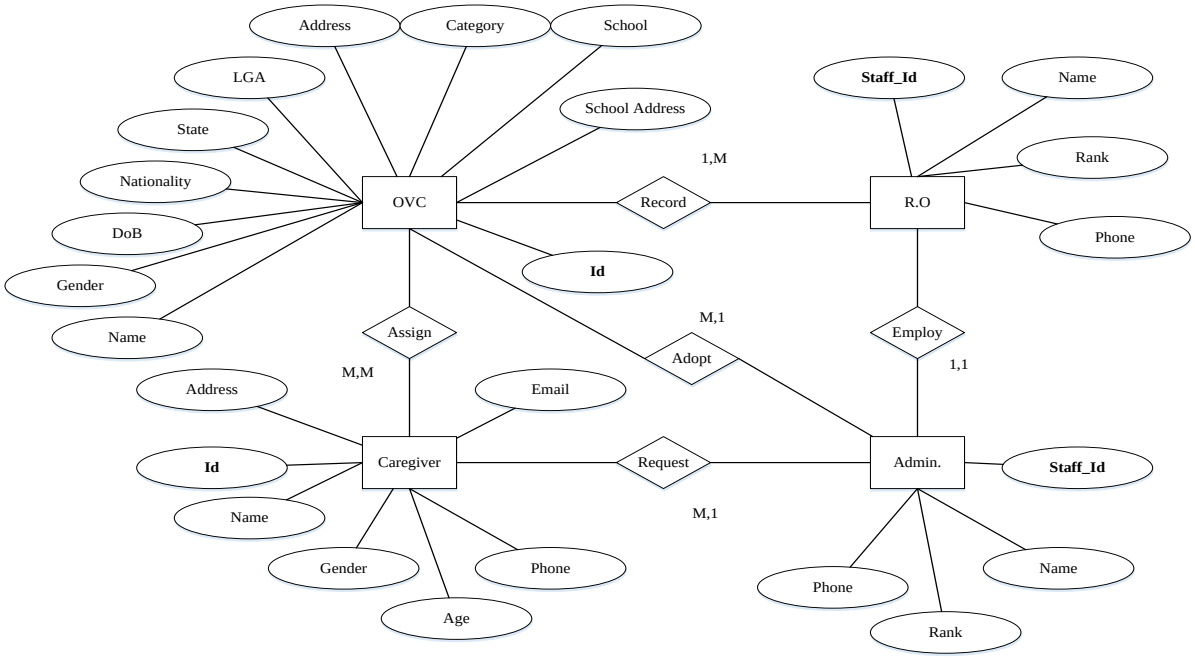


Figure 6: *ER Diagram*

System Requirement

All system developed has a predefined system requirement for a maximum performance. However, the system requirement is the minimum hardware and software to be designed. Below are the minimum hardware and software for the development.

Hardware Requirement

The following are the hardware devices that will be needed for the system

i. A personal computer (Pentium 4, 500Mhz or higher recommendation)
ii. Minimum RAM of 500Mb
iii. Un-interrupted Power Supply (UPS)
iv. Printer

Software Requirement

i. Minimum of Windows XP/Vista Operating System
ii. MySQL or SQL
iii. Internet services
iv. Dream weaver 8.0

IV. Conclusion

The main objective of this project was to provide a reliable solution to the problems of manual record system of BASOVCA in its many difficulties in managing the record system processes of their OVCs. The objective was successfully achieved for a practical solution to the problems posed by the manual system of record management. Though some challenges were encountered in the course of data collection as some of the respondents refused to complied and support the research. Notwithstanding, if the processes outlined in this research work would be implemented using appropriate programming language, record management system in BASOVCA can become a reality. But due to limited time, paper only dealt with the design aspect, the paper proposes further research by interested researchers.

Reference

Asabe, S. A., Oye, N. D. & Monday, G. (2013). Computerization of an orphanage information system: the case of international Islamic relief organization Kaduna Nigeria. *International Journal of Modern Embedded System (IJMES), 1*(2), 8-15.

Jessup, L. M. & Valacich, J. S. (2008). Information Systems Today (3rd Ed). Nottingham: Pearson Publishing.

Kidd, T. T. (2009). *Handbook of research on technology project management, planning, and operations, advances in it personnel and*

project management. (2nded.). New York: IGI Global

Laudon, K. C. & Laudon, J. P. (2010). *Management Information System: Managing the Digital Firm (*11th ed.). New Jersey: Pearson Prentice- Hall Inc, upper Saddle River.

Logan, K. (2015). *3 Challenges of paper records.* Retrieved from http://www.milnertechnologies.com/company/blog/blog/2015/07/07/3-challenges-of-paper-records on 26/08/2017.

Lucey, T. (2005). *Management information system.* (9th ed.). London: Thomson learning, High Holborn, 50-51 Bedford Row.

Mohammed, Z. & Maifata, M. N. (2016). LIBS810*Management information system: Course note.* Noun: National Open University of Nigeria. Retrieved from http://nou.edu.ng/uploads/fileuploads/Hsvj1z5Q3K1438351440.pdf on 25/11/2016.

Nasir, N. A. (2008). *Orphan home management system.* Project Report. UTeM, Melaka, Malaysia. Retrieved from http://library.utem.edu.my:8000/elmu/index.jsp?Module=webopacd&action=fullDisplayRetriever.jsp&szMaterialNo=0000049162 on 12/12/2016.

Nath, R. P. & Badgujar, M. (2013). Use of management information system in an organization for decision making. *ASM's International E-Journal of Ongoing Research in Management and IT.*

O'Brien, J. A. (2004). *Introduction to information systems for the e-business enterprise*. Boston: McGraw-Hill.

Onifade, A. (2004). *Management: office business education***.** Abeokuta: KAPPCO Nigeria Limited.

Recordkeepingsystem.BusinessDictionary.com. Retrieved from BusinessDictionary.com website: http://www.businessdictionary.com/definition/recordkeeping-system.html on 28/1/2017.

Riganati, D. (2012). What is a computerized system? Retrieved from https://www.ibm.com/developerworks/community/blogs/obidan/entry/what_is_a_computerized_system?lang=en on 12/01/2017.