

POPULATION CENSUS MANAGEMENT SYSTEM(PCMS)  
(CASESTUDY: NGARIAM SUBCOUNTY KATAKWI DISTRICT)

BY

OCOORO DENIS

BU/UP/2020/0693

[Ocogorodenispaul@gmail.com](mailto:Ocogorodenispaul@gmail.com)

0782300528/0707817536/0770867847

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SUPERVISOR

DR. ANGOLE RICHARD OKELLO

DEPARTMENT OF COMPUTER STUDIES

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**DECLARATION**

I OCOGORO DENIS do hereby declare that this project report titled Population Census Management System is mine and has never been published for any other higher institution of learning for any award or any other purpose.


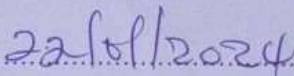
Signature.....*Denis Ocogoro*..... Date...*22/1/2024*.....

Ocogoro Denis

0782300528/0707817536/0770867847

## Approval

This project report was done under my supervision and has been completed well. It worth an award for a degree

Signed.......... Date..........

Dr. Angole Richard Okello

Department Of Computer Studies

Busitema University

## DEDICATION

I dedicate this work to my parents who doubled to be my sponsors Mr. Olemu Charles, Ikait Hellen Christine and Amoding Deborah. my supervisor Dr. Angole Richard Okelo for having guided me throughout my research. My brothers Okae Emmanuel and all my sisters Akellot Everline who also supported financially, all my sister (Iyongat Grace, Amulen Lydia and Alupo Esther), not forgetting my young brothers Nyaku Patrick and Olemu Jonathan Joseph and my friends Mr. Atim Abel Atim and Mr. Etoju Francis, not forgetting Mr. Baisuka Billy Nicholas who helped me to acquire requirements that helped me to develop a working system. On the other hand, I also dedicate this book to Mr. Emenyu Sam for having guided me spiritually throughout this course and my aunties Atim Mary, Adiko Angella , Idaukut Agnes and Akellot Josephine for having prayed for me during my course

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In a special way, I wish to express my sincere appreciation to Dr. Angole Richard Okello for the expertise and intelligence he has displayed while supervising this project

May GOD reward them abundantly

## ABSTRACT

The researcher chose to research on this topic “Population Census Management System” because of its relevance to the society. Meanwhile, the manual method so far has its attendant problem of being tedious. The researcher, in order to solve this time consuming, monotonous, and repetitive manual census activities went into a thorough study of the existing system. In the report proper, the Structured System Analysis and Design Methodology (SSADM) was adopted and explained. The high-level model of the proposed system was also designed and displayed in a format easily understandable to the user. The high-level model of the proposed system was designed architecturally and detailed designed through its separate components. There were two modules in all, each taking care of specific function like: the subcounty chief module that manages records about the subcounty census; the parish chief module manages information about parishes in their respective villages; the register person, the register states, and the register LGA modules that do the actual registration of individuals. Finally, the parallel change over methodology was adopted to enable the commission compare the results of the two systems (old and new) before implementation

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## LIST OF ABBREVIATIONS AND ACRONYMS

PCMS	Population Census Management System
ERD	Entity Relationship Diagram
DFD	Data Flow Diagram

CMS	Census Management System
IT	Information Technology
CS	Computer Science
E.D.I	Electronic data interchange
RAD	Rapid Application Development
DBMS	Database Management System

## CHAPTER ONE:

# INTRODUCTION

### 1.1 Background of the study

The process of gathering, compiling, examining, or distributing demographic, social, and economic information related to a particular time of all the individuals in a place or a well-defined region is a population census(Eme & Idike, 2015).

The population census in Uganda has a significant historical background that dates back to the colonial era. The first official population census in Uganda was conducted in 1911 by the British colonial administration(Christopher, 2008). Since then, several censuses have been conducted at regular intervals to gather accurate and comprehensive data on the country's population. The first population census in Uganda was carried out under the British colonial rule, primarily for administrative purposes. The main objective was to determine the number of people living in different regions of the country and gather information on their age, sex, occupation, and ethnicity. This data was crucial for the colonial administration to effectively govern and allocate resources.

Following Uganda's independence in 1962, the responsibility for conducting population censuses shifted to the newly established Ugandan government. The second census took place in 1969, followed by subsequent censuses in 1980, 1991, 2002, and 2014 (Ssekamatte-Ssebuliba). These censuses aimed to provide updated demographic information for planning and policy-making purposes.

Through a process of continual improvement, Management system is the organizing framework that enables businesses to accomplish and maintain their operational and business objectives(Kaplan & Norton, 1996). Through an organized set of rules, processes, practices, and resources that direct the firm and its activities to optimize economic value, a management system is meant to detect and manage risks-safety, environmental, quality, business continuity, food safety, and many more.

An effective management system is based on and controls structured and optimized processes. Thus, it establishes the systematic and continuous improvement of the organization through clear rules, roles and processes(Zairi, 1997).

Depending on the environment in which your business operates and the objectives to be met, management systems can be employed in all areas. This might happen inside a particular business, such as transportation and logistics, the automobile industry, or even across industries, like healthcare.

This is a system that was designed for efficient registration, storage, and retrieval of information on Uganda's population(Jibia, Mubaraka, & Odie, 2013). Using the software, an authorized user can view all records which can also be filtered by year, total figure, sex and L.G.A.

Census has been a reliable exercise from time, from where government rely for decision-making, and aids for administration and planning. According to Robert M. Groves, (2010) Director of the United States Census Bureau; “Just like we cannot survive without roads and bridges, the country does not function well without an updated census to distribute funds to areas that most need them and to support community decisions and their own future.

The increasing complexity of modern life means a greater need to plan housing, schools, roads, transportation, and a vast range of social and economic requirement for nation (Levy, 2016). This cannot be done without a detailed count of the population. Census is being officially managed by some organizations or government, for example the National Population Commission (NPC) (Babando & Bakari).

The installation of computer in these organizations or bodies that manages census information will assist not only in fast-recording information but also in solving certain problems, which cannot be easily resolved manually(Babando & Bakari). The human resource of any enterprises is considered to be their most valuable assets, if they are properly harnessed and are well motivated to perform their assigned tasks in such a manner as to enhance the enterprises goals and objectives.

## 1.2 problem statement

The manual system of using ink and paper as a way of collecting and keeping data or records at the subcounty level that is, data is stored in books and manual files. This makes retrieval of

information and planning for the people in the different parishes difficult for the auditor and the economic planning department at district level. This is because the books and the paper files are many and therefore retrieving or looking for the required information might be hard and expensive since more time was required for better cross-checking of every time within the department.

There was also a problem of resource allocation, failure to know the actual number of tax payers, death records, birth records and the number of students at different levels of education.

### 1.3 Main objective

The purpose of the study is to develop an integrated, interactive, flexible population census management system that replaces the current paper-based census system with its problems.

### 1.4 Specific objectives

To review the literature and determine the requirements for developing the population census management system

To design the system for population census management system

To implement the design of population census management system

To test the functionality of population census management system

### 1.5 Significance of the study

The system will solve the problem associated with the acquisition, storage and retrieval of information on population census with ease.

A timely retrieval of information is anticipated with efficiency and reliability.

It will provide security to data that are unauthorized, users will not gain access to those files and fraud will be minimized in the society which will lead to improvement in the administration processes.

### 1.6 Scope of the Project

The major aim of the project is to design a system that will have all information about population census and retrieving of data whenever needed in the society. It focuses on the registration, retrieval and management of information about individuals in the society.

#### 1.6.1 Geographical study

The study was conducted in Ngariam sub-county, Katakwi district in Eastern Uganda.

### 1.6.2 Time scope

The study covered the period of four months

## CHAPTER TWO:

# LITERATURE REVIEW

### 2.0: Introduction

This Chapter presents the review of research work from journals, internet sources and other projects already done which is related to the Population Census Management System (PCMS) as well as an analysis of existing literature on the subject with the objective of revealing contributions, weaknesses and gaps. A discussion of the theoretical and practical perspectives of earlier research conducted on the Population Census Management System (PCMS) will be covered in this chapter. A variety of systems can be created to administer population censuses. Some of the sub counties still use the manual system of managing population census in terms of head counting by physical movement from door to door in all the villages to compute number of the population of various villages and parishes. However, Population Census Management System (PCMS) is developed to replace the manual system using the latest technology. Replacing the manual system with Population Census Management System (PCMS) shall require a lot of effort and adaptation to a new environment.

### 2 .1 census management system

.An information system is a group of people, processes, and tools that are created, managed, and designed to gather, store, retrieve, and display information(Dumas, Van der Aalst, & Ter Hofstede, 2005). Systems of information are created to meet the district's information needs. It is in charge of organizing information services and creating systems that adhere to user needs. The process of gathering and arranging data into a more thorough form that can be quickly retrieved and used for the goal is often referred to as information systems(Koivisto & Hamari, 2019).

Electronic data interchange (E.D.I) permits computers or laptops and information on Networks to communicate directly with other computers in different geographical locations and strengthening joint operations among different entities.

### 2.2Census (population) information

A census is the procedure of systematically acquiring and recording information about the members of a given population (Kimbir & Chin, 2014). It is a regularly occurring and official

count of a particular population. The term is used mostly in connection with national population and housing censuses; other common censuses include agriculture, business, and traffic censuses. In the latter cases the elements of the 'population' are farms, businesses, and so forth, rather than people. In this research, however, we are dealing with the census whose elements of population is the people. Therefore, it is necessary to explain population and formulators in population dynamics.

### 2.3 Population

Population can be defined as the total number of people who live in an area, a city, a country, of a particular group or type of people or animals living in an area; and or the total number of people living somewhere (Sadler, Bates, Hale, & James, 2010). Often, there is a sharp increase or decrease of the population of a people, which can be as a result of fertility or war outbreak, epidemics, disaster, etc., respectively.

#### 2.4.0 Birthrate

This refers to the total number of children born alive per 1000 of a given population in a given year

#### 2.4.1 Death rate

This refers to the total number of people who die in a year per 1000 of the total population (Younossi et al., 2016)

#### 2.4.2 Population density.

The number of people per unit area of land per square kilometer

#### 2.4.3 mortality rate

This refers to the number of people who die before their life expectancy is over

#### 2.4.4 fertility rate

This refers to yearly number of children born alive per thousand women within the child bearing age bracket, normally between ages of 15 and 49 years

### 2.5 Population in each parish of Ngariam subcounty

Ngariam subcounty has the total population of 12800 male contributes 6300 while females contributes 6500, okuso parish 1350 people, olupe parish 1476, akisim parish 1800, operu adoot 1200, bisina parish 1540 and okore parish has total population of 1700

According to Okello ben subcounty speaker ngariam subcounty has 3152 animals which include cows, sheep, goats, pigs and domestic rabbits being reared in some homes

## CHAPTER THREE:

# METHODOLOGY

### 3.0: Introduction

This chapter presented the system design, data collection methods, sampling strategies, data analysis and ethical considerations that were used in the study

### 3.1: Area of Study

This study was conducted in Ngariam subcounty which is located in Katakwi district along Magoro road and 15 kilometers away from Katakwi town in Easter Uganda. The subcounty was established on 19<sup>th</sup> of November, 2007

### 3.2 Population and Sampling

This study involved seven respondents from whom data was collected they include, one parish chief from Okuso parish, Parish chief of Olupe parish, parish chief of okore parish, Parish chief of Akisim, Parish chief of Bisina, Parish chief of Operu adoot and Subcounty chief of Ngariam

### 3.3 Data collection method

#### 3.3.1 Observation

This method was used to get first hand information by seeing the format of the use of papers and files for storing of the population census. The researcher also observed how was recorded through the use of the ink

#### **3.3.2 focus group discussion**

This involved selecting specified group of people to discuss specific topics and understand the participant's views. here the researcher formed a group of discussion between enumerator, subcounty chief, and parish chief about the manual system of the population census from which I got information.

### **3.4 Data presentation and analysis**

This case study took into account qualitative strategies to help the researcher comprehend the issue more thoroughly. The following data gathering techniques were used to gather data from the field.

Data from the field were obtained by using a combination of the following data collection instruments and the researcher should keep in the mind two types of data thus primary data and secondary data

The following tools were used to acquire data from the field, and the researcher should keep in mind that there are two different categories of data: primary data and secondary data.

### **3.4.1 Primary data**

Primary data are those that were gathered by the researcher directly. This information has never before been acquired. Interviews with candidates for the following position, eligible voters, and election officials produced the primary data.

### **3.4.2 Secondary data**

Secondary data refers to information that is already available and has previously been gathered and examined by another party. When using secondary data, the researcher must look into other sources to see where he may get them (Kothari 1985). Published data or unpublished data are both acceptable forms of secondary data. In order to support the study, a significant portion of the secondary data will be gathered using a documentary tool from the internet and websites. Search engines with search tools like Google Scholar will also be employed.

## **3.5 System development**

The major development approach employed for this project was the Structured System Analysis and Design methodology.

SSADM follows the waterfall life cycle model starting from the feasibility study to the physical design stage of development. One of the main features of SSADM is the intensive user involvement in the requirements analysis stage. The users are made to sign off each stage as they are completed assuring that requirements are met. The users are provided with clear, easily

understandable documentation consisting of various diagrammatic representations of the system. SSADM breaks up a development project into stages, modules, steps and tasks. The first and foremost model developed in SSADM is the data model. It is a part of requirements gathering and consists of well-defined stages, steps and products. The techniques used in SSADM are logical data modeling, data flow modeling and entity behavior modeling.

The specific methodology to be employed was the Rapid application development (RAD). It is based on prototyping and iterative development with no specific planning involved.

It focuses on gathering user requirements through meetings or focus groups, early testing of the prototypes by the user using iterative concept, reuse of the existing prototypes (components), continuous integration and rapid delivery. In the RAD model, the functional modules are developed in parallel as prototypes and are integrated to make the complete product for faster product delivery.

A prototype is a working model that is functionally equivalent to a component of the product.

Therefore, the most important aspect for this model to be successful is to make sure that the prototypes developed are reusable.

### 3.6 System Analysis and Design

The research design refers to the overall strategy utilized to carryout research that defines a succinct and logical plan to tackle established research questions through the interpretation, collection discussion and analysis of data (artificial intelligence).

There are a number of tools that were used to represent facts from the collected data

They include the following data flow diagram, context diagram, and user case diagrams

#### 3.6.1 Data Flow Diagram

A data flow diagram is a graphical representation of the flow of data through an information system. it can as well be used for the visualization of data processing

#### 3.6.2 Context flow diagram

Context flow diagram is a visual representation of the flow of information or activities within the system or process. It's a geographical tool that helps to identify and organize the various steps

and relationships between them, making it easier to understand and analyze the system or process

### 3.6.3 User case Diagram

A user case diagram is a representation of a user's interaction with the system that shows the relationship between users and different cases in which the user is involved. Its used to verify the type of users of the system and the different user cases

### 3.6 System Implementation

The following tools were used in the implementation of the Population Census Management System:

Because Visual Studio Code was utilized as the primary text editor, the researcher was able to write the dynamically generated pages quickly and easily.

HTML is a markup language used to create user interfaces with Cascading style sheets (CSS).

The system was built on the Windows 10 Pro operating system, with the back end built on the MySQL database server.

MySQL was very useful in constructing the database of Population Census management system. A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently. Database was used in order to make data access easy, quick, inexpensive and flexible for the user.

The front end was built with Hypertext Preprocessor (PHP). PHP is an embedded server-side scripting language in HTML that is used to manage dynamic content, databases, and session tracking. It allowed the researcher to immediately write basic script into the HTML files. By putting all of the components of a web page in a single HTML file, PHP made it much easier to administer the massive website. The users were unable to view the source code, ensuring source code security. To implement the system interfaces in a Visual Studio Code programming environment, I employed technologies such as PHP and HTML programming languages. For database implementation, I also used Xampp server as a server-side database tool. Clicking was used to interact with the system interface.

## 3.7 Testing and Validation

Both unit testing and integration testing were performed on the Population Census Management system to clarify the specifications of the system to reveal possible faults and establish confidence in the system.

Unit testing focused on one function at a time in that whenever the researcher designed a function, it would be tested instantly before proceeding to design another function.

After all of the modules had been assembled to form a full system, integration testing was performed. The goal of integration was to ensure that all of the system's components worked together and could be combined to make a fully functional system.

In the end, user testing was performed. This involved the potential users of the system to test the system if it met their requirements.

The researcher performed software validation to determine whether the software product satisfies or fits the intended use, that is, whether the software met the user requirements, not as specification artifacts or as the needs of those who would operate the software only, but as the needs of all stakeholders (such as users, operators, and administrators).

### **3.8 Analysis of the system development**

### **3.9 Ethical Considerations**

The ethical issues that were considered during data collection and analysis include the following;

- I. **Respect for intellectual property:** During the course of this research project, the researcher strived never to copy, or plagiarize other people's work but instead considered text citation and referencing in a bid to acknowledge the source of the information, that is, statistics, tables, expressions and phrases.
- II. **Integrity:** The researcher endeavored to be sincere and consistent in all her actions during the research process and kept her promises and agreements with all the users of the user of Population Census Management System.
- III. **Honesty:** The data results, methods, procedures and publication status were reported honestly by the researcher. The researcher did not falsify or fabricate data and neither did he deceive the public nor colleagues on the data collected and the reasons for collecting data.

- IV. **Confidentiality:** The researcher protected any piece of sensitive information that was provided by respondents and as well followed the guidelines that govern protection of confidential communications.
- V. **Objectivity:** The researcher endeavored to avoid systematic bias in all aspects such as natural bias in reporting data, avoided defective measuring devices, ensured proper sampling and carefully observed the respondents considering the indeterminacy principle.

## CHAPTER FOUR

# FIELD STUDY AND SYSTEM DESIGN

### 4.1: Introduction

This chapter describes the study of the current system, strength of the current and weaknesses of the current system, system requirement (functional and non-functional requirements), and system design (system architecture, context diagram, data flow diagram, ERD, user case diagram).

### 4.2 background information of the existing system

The existing system is a paper based. With this system the census register is collected from each parish of Ngariam subcounty. At the time of census computation which is conducted by the census management board later on the information is fed into the designed computer

### 4.3: strengths of the current system

The designed system requires that anyone who uses the system has the rights to register and locate passwords and also the system allows the retrieval of information whenever the need for such information is needed.

Its flexible and can be done by everyone irrespective of whether a person has the gadgets like smartphone or a laptop.

**Improved accuracy and efficiency:** Computerized population census management systems can help reduce errors and improve the accuracy of data collection and analysis. With automated data entry and validation, the system can ensure that data is consistent and complete, reducing the need for manual data entry and review.

**Faster data collection and analysis:** Computerized systems can process and analyze large amounts of data much faster than manual methods, allowing for real-time reporting and decision-making. This can help identify trends and patterns in population data, which can be used to inform policy and resource allocation.

**Enhanced data security and privacy:** Computerized systems can provide robust security and privacy controls to protect sensitive population data from unauthorized access or breaches. This is particularly important in cases where the data includes personal or sensitive information.

**Improved data visualization and reporting:** Computerized systems can generate detailed reports and visualizations of population data, making it easier to understand and communicate the information to stakeholders. This can help policymakers and other stakeholders make more informed decisions.

**Integration with other systems:** Computerized population census management systems can be integrated with other systems, such as healthcare or education systems, to provide a more comprehensive view of the population and their needs. This can help identify areas where resources needed to be allocated to improve outcomes.

#### **4.4 weakness of the current system**

The current system is too tedious, time consuming and its prone to errors because counting of the population is done manually

The paper document is less secure compared to an electronic system thus there are high chances of the information getting lost on paper record in case of disaster such as fire outbreak, flooding and earthquakes among others.

There is a problem of inconsistency in record keeping, rooms for errors, mistaking information about population census management system due to miscalculation of the people and animals.

**Time-Consuming Process:** Conducting a manual population census is a time-consuming process. It involves deploying a large number of enumerators to visit households and collect data. This can lead to delays in obtaining accurate population figures, especially in densely populated areas.

**Cost-Intensive:** Manual population census requires significant financial resources for training enumerators, printing forms, and conducting field operations. The costs associated with transportation, supervision, and data processing can be substantial, making it a costly endeavor for governments and organizations.

**Data Accuracy and Integrity:** Human error is inherent in manual data collection processes. Enumerators may make mistakes in recording information or may face challenges in obtaining accurate responses from individuals. This can lead to inaccuracies in the census data, impacting its overall integrity.

**Limited Coverage and Accessibility:** In remote or hard-to-reach areas, conducting a manual population census can be challenging. Enumerators may struggle to access certain communities, leading to underrepresentation or exclusion of certain population groups from the census data.

**Data Security and Privacy Concerns:** Manual population census involves handling sensitive personal information of individuals. Ensuring the security and privacy of this data throughout the entire data collection process can be a significant challenge, especially considering the potential for data breaches or unauthorized access.

## 4.5 System requirements

### 4.5.1 Functional requirements.

Functional requirements define what the system is supposed to do. Functional requirements can be data manipulation and processing and other specific functionality that define what the system is supposed to accomplish. Therefore, the PCMS should:

Able to display all the requirements and options of the form to be filled by people to be counted in the database to the system as per their access rights and privileges.

Able to secure storage and retrieval of census details from the database

Enable secure login of census information by ensuring that unauthorized persons should not be able to access sensitive information by hacking this was implemented by setting strong passwords

To maintain and manipulate records in database through functions like edit, delete and view

Be able to validate and verify input and output data

**1. User Requirements:** These requirements capture the needs and expectations of the system's end-users. They define the functionalities that users require to accomplish their tasks effectively and efficiently. User requirements are often expressed in user stories or use cases, which describe specific scenarios or interactions between users and the system.

**2. System Requirements:** System requirements specify the overall behavior and functionality of the system as a whole. They define how different components or modules of the system should interact with each other to achieve the desired outcomes. System requirements may include performance criteria, such as response time or throughput, as well as constraints related to security, reliability.

### 4.5.2 Non-functional requirements

Non-functional requirements specify criteria that can be used to judge the operation of the system, rather than specific behavior. In addition, these requirements specify how the system is supposed to be and these are shown in the table 0-1 below.

CATEGORY	REQUIRED	DESCRIPTION
OS	windowsXPservicepack2, windows10 pro, windows vista, Linux, MSwindow	Web browser host OS
web browser	Mozilla Firefox, google chrome, opera and internet explore	Displaying web pages
processor	2.0GHz processor speed	Microprocessor
hard disk	40GB	Store the data
RAM	512mb and above	host operating system memory

#### 4.5.3 Database management system

A database management system (DBMS) is a software product through which users interact with a database (Rawat & Purnama, 2021). Database system management and design. The actual manipulate of the underlying database structures is handled by the DBMS(Gasser, 1988). Forms; forms in this study will be a screen that will have seen set up to display or accept information either directly to or from a table. It will make the database much easier and quicker to use. Repots; reports will be used to pre-design database that loads out on the page in a specific order.

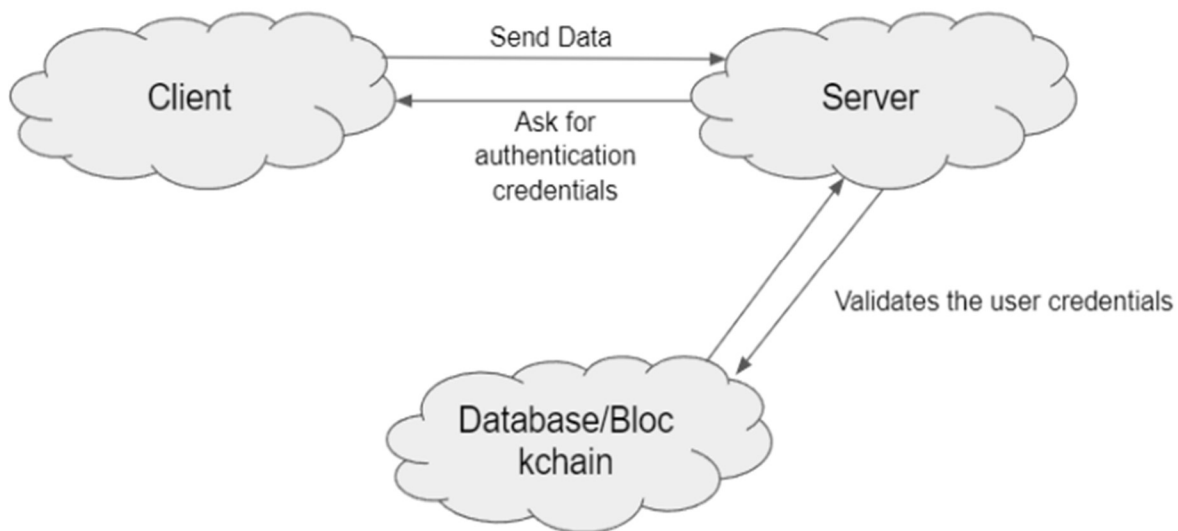
#### 4.6 System design

The requirements determined were used to design the system. The design system development methods in the study are rapid application development (RAD) derived from SSADAM The design stages used include; system architecture, context flow diagram, data flow diagram, system modelling using UML (use case) and entity relationship diagram (ERD)

#### 4.6.1 Architecture

The system in the study is a web-based system therefore the architecture contains internet, web browser and database as shown in figure 2.

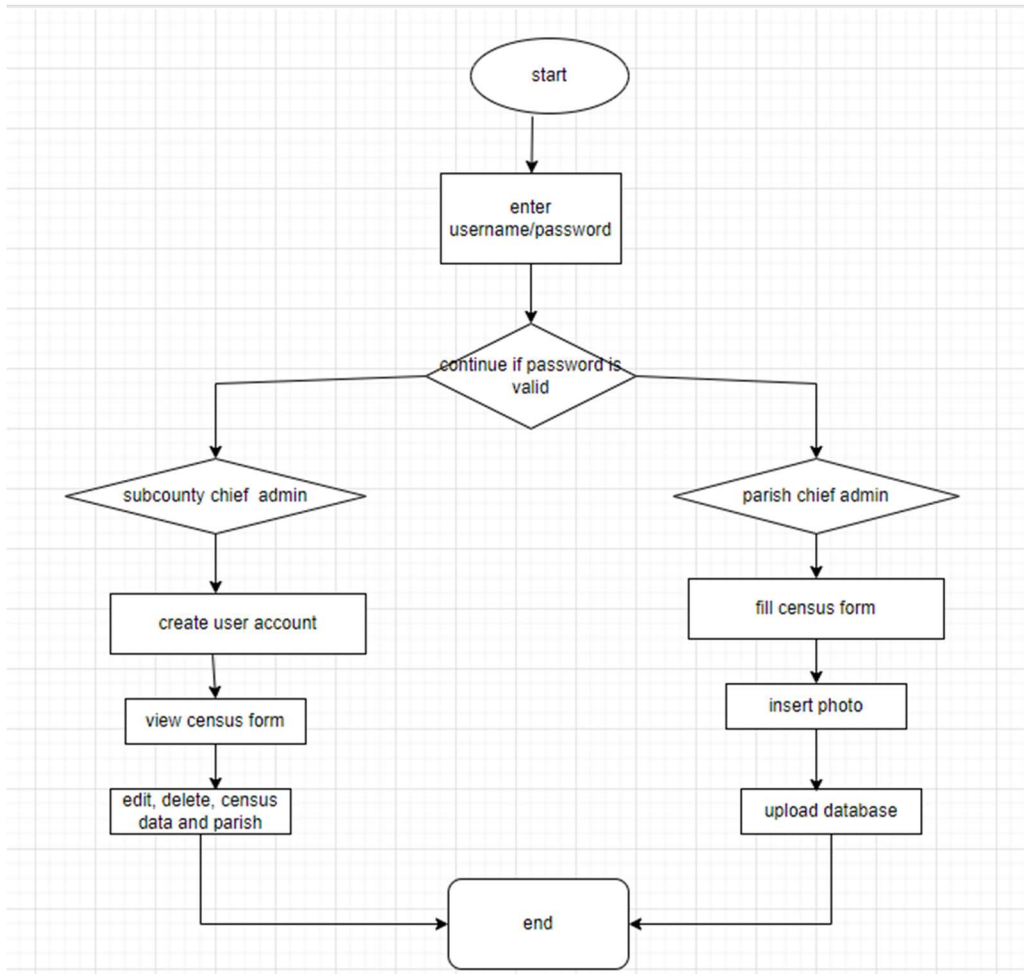
The information flows the internet to the server through the use of wireless or non-wireless. The web browser requests the access of the information from the server and server provides the information through the web browser. The server retrieves the information the data base where its stored and provided to the server back when needed and the clients gets the information from the server



***Figure 1 Shows System Architecture***

#### 4.6.2 Context flow diagram

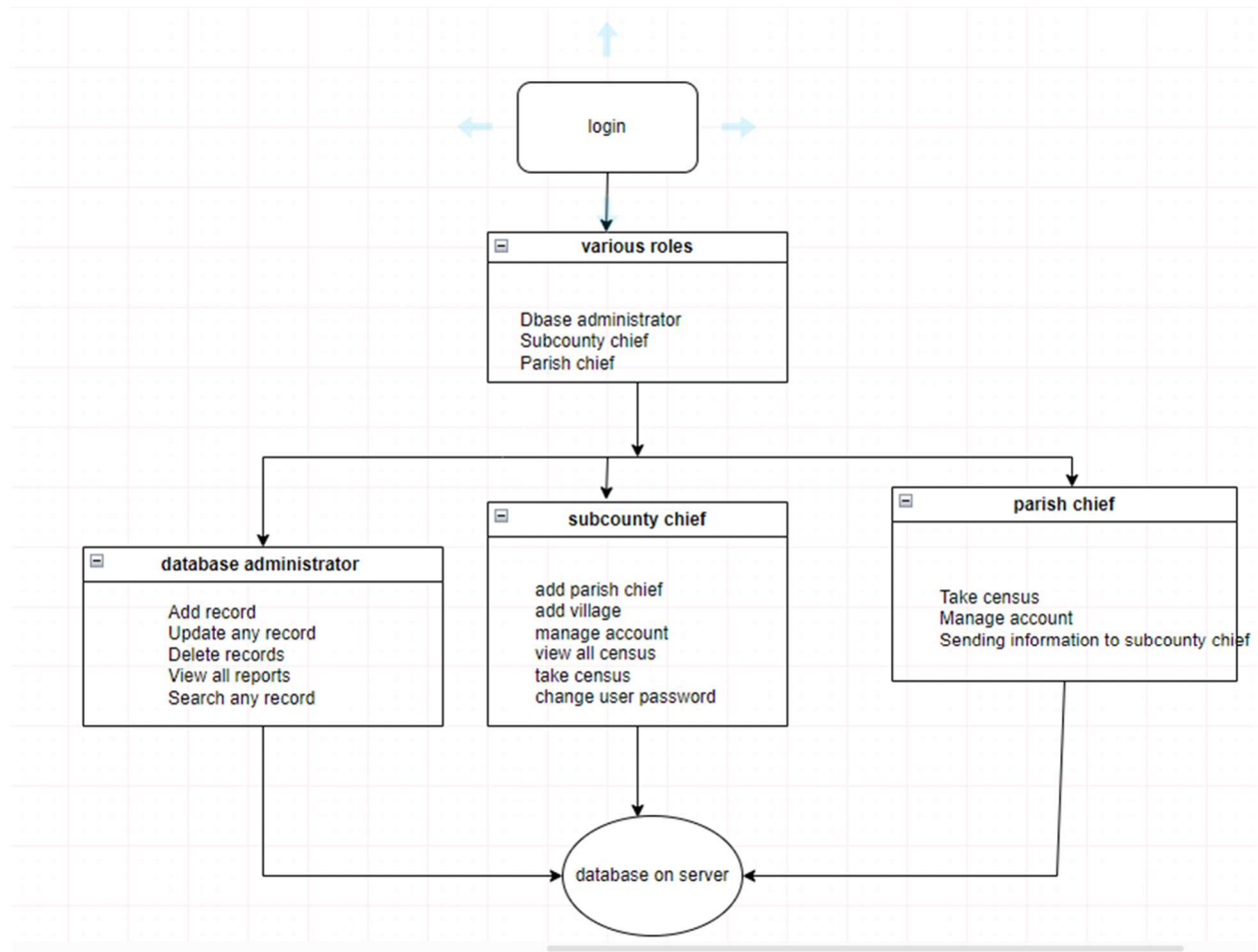
Context flow diagram is a visual representation of the flow of information or activities within the system or process. It's a geographical tool that helps to identify and organize the various steps and relationships between them, making it easier to understand and analyze the system or process.



**Figure 2 shows context flow diagram**

#### 4.6.3 Data flow diagram

This shows how data moves from one point to the next, in this design the data flow has been presented in the figure 3 below.

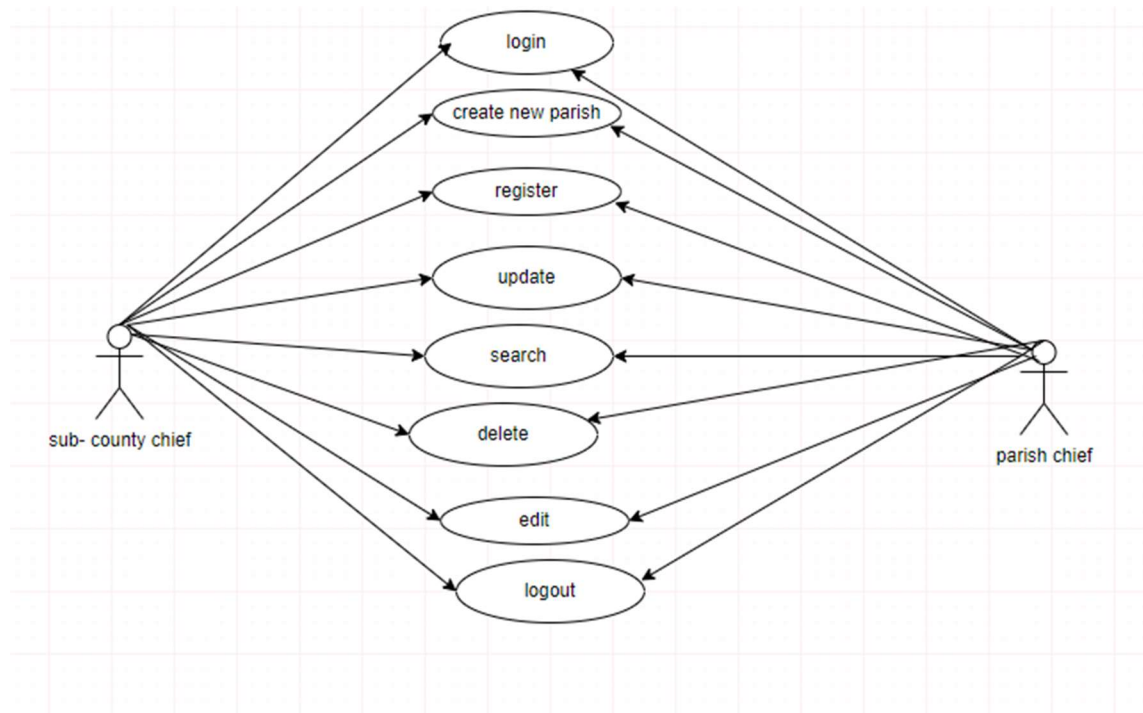


**Figure 1 Shows data flow diagram.**

#### 4.6.4 User case diagram

The user case diagram represents all each entity present in the proposed system. The use case diagram includes the administrators, parish chiefs and enumerator and the system. It shows the activities that are performed by the administrator, parish chief and enumerator on the system as seen in figure 4 below.

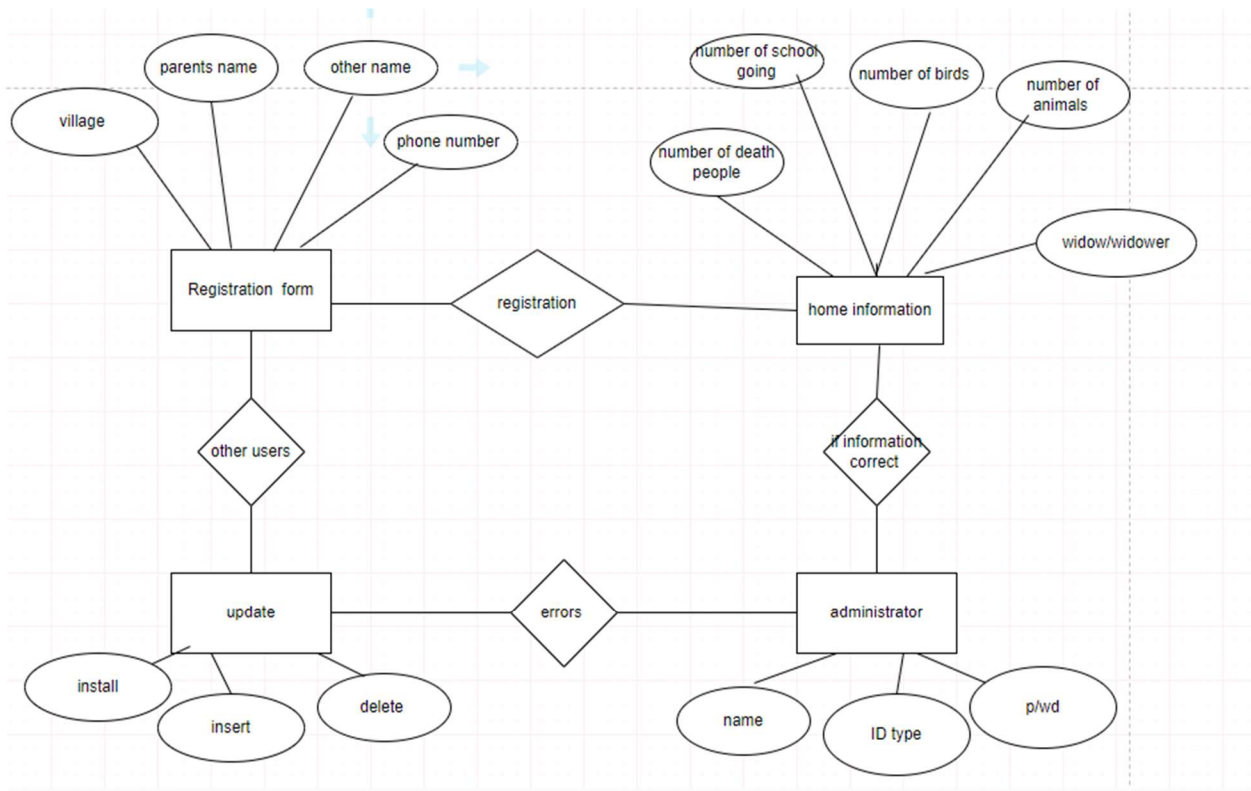
The administrator logs in the system, registers people in the parish and update the individual's details



**Figure 4 shows user case diagram**

#### **4.6.5 Entity Relationship Diagram**

The entity relationship diagram (ERD) is a visual representation of different data using convention which describe how data are related to each other and for this case it is shown in the figure 5 below



**Figure 5 shows entity relationship diagram**

## CHAPTER FIVE

# IMPLEMENTATION AND TESTING

### 5.0 Introduction

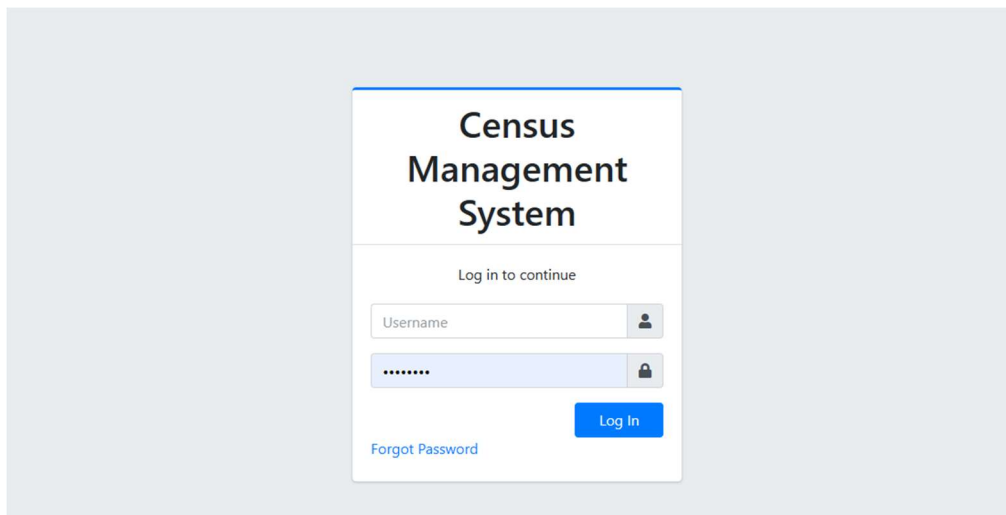
The chapter was about the presentation and analysis of the data related to the current population census management system. The study specifically focused on the security risks faced by the current census management system, transparency of the whole census management system and areas of improvement

### 5.1 System implementation

The system was created using the Windows environment. Microsoft Visual Basic 2005 was used to create the user interfaces (front end), and Microsoft Access as a database management system (DBMS) was used to create a database for storing data, after which a logical connection was built.

### 5.2 Login page

This is the first form that comes first when the program is launched. Its mainly meant for security and authentication purposes. When loading the system, one should go to the web browser and type <http://localhost/census> to open the login page



**Figure 6 shows login page**

### 5.3: Dashboard

Dashboard of population census management system appeared. From the dashboard, the admin view information like parishes, parish chiefs, census and account settings

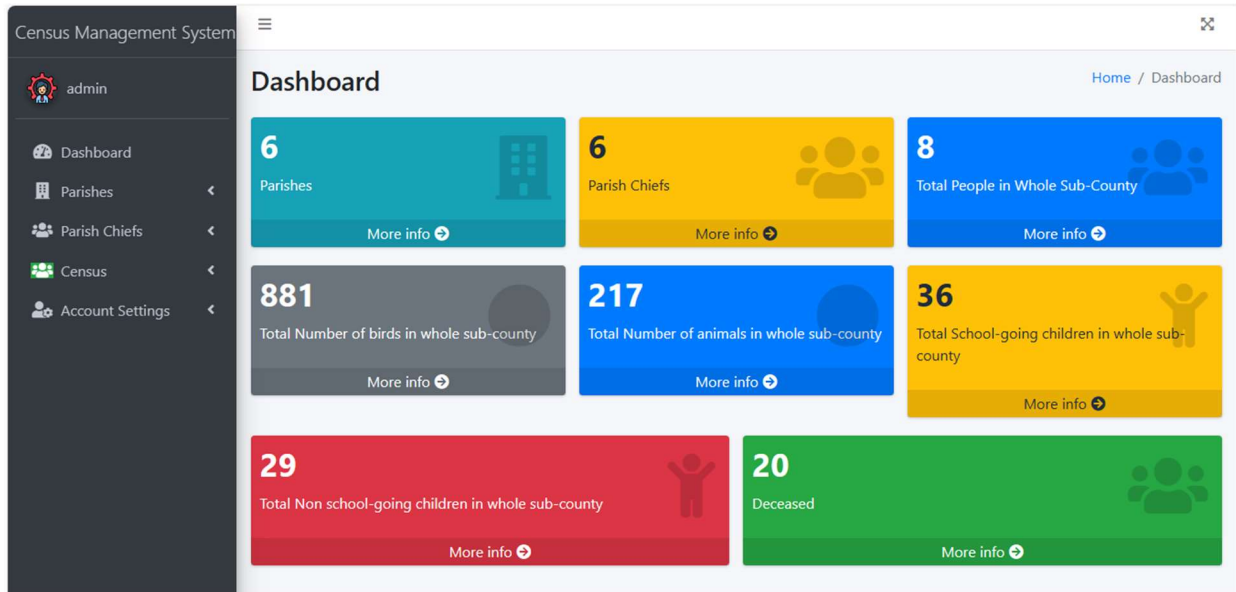


Figure 7 shows dashboard of PCMS

### 5.4 ADDING AND MANAGING PARISH

The interface shown in the figure below enables the administrator to capture the details of adding new parish being created, parish chiefs and managing accounts in terms of setting strong passwords and encrypts passwords

Census Management System

admin

- Dashboard
- Parishes
- Parish Chiefs
- Census
- Account Settings

### Add Parish

Dashboard / Add Parish

Parish Details

**Parish Name**

Enter Parish Name

Save Parish Details

---

Census Management System

admin

- Dashboard
- Parishes
- Parish Chiefs
- Census
- Account Settings

### Manage Parishes

Home / Manage Parishes

Parish Details

Copy CSV Excel PDF Print Column visibility

Search:

#	Parish Name	Date Modified	Action
1	Operuadot	2023-11-09 19:18:19	
2	Bisina	2023-11-09 19:18:05	
3	Okuso	2023-11-09 19:17:55	
4	Akisim	2023-11-09 19:17:46	
5	Olupe	2023-11-09 19:17:38	
6	Okore	2023-11-09 19:16:34	

Showing 1 to 6 of 6 entries

Previous 1 Next

**Figure 8 shows adding and managing parishes**

## 5.5 ADDING AND MANAGING PARISH CHIEFS

This is where admin can add, edit, create and delete the information

The image displays two screenshots of the Census Management System interface. The top screenshot shows the 'Add Sub-County Chief' form, and the bottom screenshot shows the 'Manage Parish Chiefs' table.

**Add Sub-County Chief Form:**

Fill in all the fields in order to save sub-county chief's details

**Full Name**  
Enter Sub-County Chief's Full Name

**Email address**  
Enter email

**Mobile Number**  
Enter email

**Parish**  
---Select Parish---

**Username (used for login)**  
root

**Password**

**Manage Parish Chiefs Table:**

#	Username	Full Name	Email	Contact	Parish	Reg. Date	Action
1	akello	Akello Janet	ak@gmail.com	0734567891	Bisina	2023-05-21 21:30:00	
2	nicholas	Billy Nicholas	billynicholas47@gmail.com	0784243043	Okore	2023-09-28 17:19:47	
3	odoi	Odoi Tim	user@gmail.com	0701010955	Olupe	2023-11-08 20:06:10	
4	ivan	Omotola Ivan	ivan@gmail.com	0784657362	Akirim	2023-11-08 23:01:24	
5	richard	Akol Richard	rich@gmail.com	0703647281	Okuso	2023-11-08 23:07:22	
6	patience	Masika Patience	patience@gmail.com	0704410139	Operuadot	2023-11-08 23:17:53	

Showing 1 to 6 of 6 entries

Figure 9 shows adding and managing parish chief

## 5.6 TAKE CENSUS AND MANAGE CENSUS

The figure below allows subcounty chief (admin) and parish chiefs to take census by filling somebody's details in the form

The screenshot displays two panels from the Census Management System. The top panel, titled 'Take Census', contains a form for entering individual details. The bottom panel, titled 'Manage Census', shows a table of existing census entries with various action options for each row.

**Take Census Form Fields:**

- Sur Name: Enter Person's Sur Name
- Other Name: Enter Person's Other Name
- Gender: ---Select Gender---
- Nationality: Enter Person's Nationality
- NIN Number: Enter Person's NIN Number or its equivalent
- Date of Birth: dd/mm/yyyy
- Mobile Number: Enter Mobile Number e.g. 0756342546
- Email address (optional): Enter email address
- Marital Status: ---Select Marital Status---
- Occupation: Enter Person's Occupation
- Parish: ---Select Parish---
- Village: Enter Village name

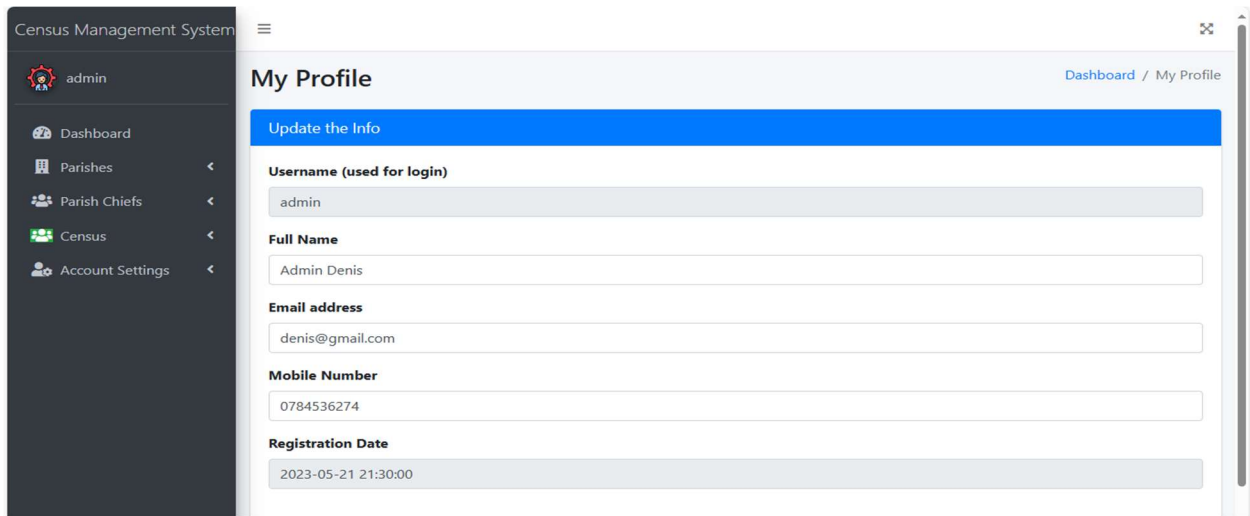
**Manage Census Table:**

#	Tl	Surname	Tl	Other Name	Tl	Gender	Tl	Nationality	Tl	Parish	Tl	Village	Tl	Action	Tl	
1		Aluli		Tony		Male		Ugandan		Olupe		Kosokoso				
2		Kirabo		Switin		Female		Ugandan		Bisina		Olupe Hill Village				
3		Etyono		Isaac Omubanda		Male		Ugandan		Olupe		Olupe Hill Village				
4		Mutungwire		Albert		Male		Ugandan		Olupe		Olupe Hill Village				
5		Lost		Sheep		Male		Ugandan		Okore		Okore Lumi				
6		Luswabi		Joseph		Male		Ugandan		Okore		Okore Hill				
7		Wakooli		Emma		Male		Ugandan		Bisina		Bisina B				

Figure 10 shows taking census and manage census

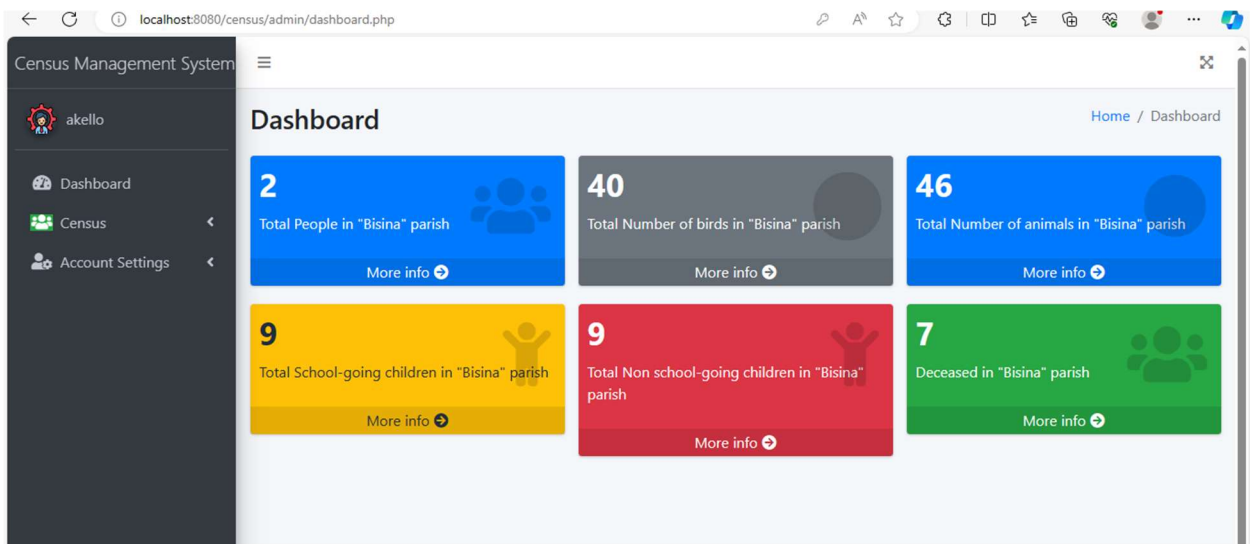
## 5.7 ADMIN PROFILE

This shows the personal details of the admin



**Figure 11 shows the profile of parish chief**

## 5.8 PARISH CHIEF DASHBOARD



**Figure 12 shows parish chief dashboard**

## CHAPTER SIX:

# DISCUSSION, CONCLUSION, RECOMMENDATION AND FUTURE WORK

### 6.1 introduction

This chapter presents the discussion, recommendation and conclusion in line with the research objectives of the study

### 6.2 Discussion of the results

The discussion of the findings was presented in accordance with the research objectives of the study

#### **Objective (1) To review the literature and determine the requirements for developing Population Census Management System**

In the requirement determination, data collection was got through library research and field study from carrying on interviews. under library approach the, the data was got from the previous work done which enabled me to align my project work. The library research generates for me information and requirements that were being used in the system design of the DFD database design and few others which led to the fulfilment of functional and non-functional requirements. The field work research enabled me to get to know how the manual system works

#### **Objective (2) To design the system for Population Census Management System**

The system was designed depending on the requirements by RAD from the SSADM software. Which included the following procedures to be followed Architecture, Context Diagram, Entity Relationship Diagram and Database design which enabled the smooth flow of data thus encouraged the design and evaluation of the effectiveness of the PCMS

#### **Objective (3) To implement Population Census Management System**

The implementation of the system was carried out using the following implementation tools, visual studio code editor, google chrome, internet explorer, MySQL, HTML, Xampp sever for local host and the laptop with windows 10 pro to succeed in the implementation of the system. chapter 5 interface was used as my guide which contained dashboard, subcounty chief, parish chief, manage account and log in/ out.

#### **Objective (4) To test and validate the Population Census Management System**

The system was tested during and after its implementation. Each component of the system and the whole system was also tested

Unit testing was used to test individual parts of the code whereby every part of the interface was as well tested to detect whether the system functions well. This was crucial during the identification of the errors in specific units of the code thus making error detection easy

Integration testing was done after the whole parts of the system had been put together to make a complete system.

### **6.3 Conclusion**

The study of the existing system was done and the new system designed. The need for computerized census management system was highly emphasized as computer could store, update, and retrieve information in a manner that no human agent can do. Computers could always process data and produce accurate and reliable results when given correct data. The use of computers in census operations solved the problems encountered in the manual system. Hence, I concluded that the computerization of the census activities is a welcomed development that must be undertaken as of its great importance which include; the increase in the processing speed, improved storage facilities and easy retrieval and bridges the gap of transporting data with vehicles through the use of computer network

### **6.4 Recommendations**

The PCMS requires further work to be done in different areas for example training both the staff and users on how to use the computerized system to create awareness of its existence and importance, instantly sending and receiving of notifications and also expansion of the facility to accommodate more departments such as orthopedics, mental abilities. This will help to improve on the functionality of the designed system.

#### 6.5 Limitations

The researcher encountered number of constraints which to some extent slowed the success of the study. This includes the following;

##### **6.5.1 Financial constraints**

There was a problem of financial support since the study was self-sponsored. This made some of the activities to delay in the study, however through hard work and commitment it has to come to an end successfully.

##### **6.5.2 Time constraint**

The time that was allocated for the study was not enough, given the fact that there were lectures, course works, tests, exams and school practice alongside doing research

### **6.5.3 Power Constraints**

The unstable electric power supply was another problem that was not favorable to the researcher during research study. This resulted into improper planning and progress for the system development

## Appendices'

Topic: Population Census Management System

Dear respondent

Am Ocogoro Denis BU/UP/2020/0693 a student of Busitema university pursuing a bachelor's degree in science education. Am carrying research study of Population Census Management System in Ngariam subcounty Katakwi district

This survey is to guide me on how to understand PCMS. I kindly request you for your cooperation in answering the following questions. Any information provided will be confidential for academic purpose

1.appendix one

### **Interview guide questions**

1.who is responsible for recording and keeping of subcounty population census

.....

2.how is data of population census being recorded, registered at the subcounty level?

.....

3.are there some problems facing the current system in registering and keeping data

.....

4.In your own views, how would such problems you mentioned above eliminated so that this whole process of storing data is improved?

.....

Would a web based computerized census management system be of great benefits to subcounty particularly in economic planning?

.....

## Appendix ii

### Questionnaire

1. What is your full name?

A First Name Only

B Last Name Only

C Both First and Last Name

2. What is your gender?

A Male

B Female

C Other

3. What is your date of birth?

A Day/Month/Year format

B Month/Day/Year format

C Year/Month/Day format

4. What is your current residential address?

A House Number and Street Name

B City/Town

C State/Province

D Country

5. How many people live in your household, including yourself?

A 1-3

B 4-6

C 7 or more

6. What is the relationship of each person to the head of the household?

A Spouse

B Child

C Parent

D Other (please specify)

7. What is the highest level of education completed by each member of the household?

A No formal education

B Primary school

C Secondary school

D Tertiary education

8. Are you currently employed?

A Yes, full-time

B Yes, part-time

C No

9. What is your primary source of income?

A Employment salary/wages

B Self-employment/business income

C Pension/Retirement income

D Other (please specify)

10. What is the approximate monthly household income?

A Below average income level

B Average income level

C Above average income level

11. Do you have access to basic amenities such as clean water and electricity in your household?

A Yes, both clean water and electricity

B Clean water only

C Electricity only

D None of the above

12. Are there any individuals with disabilities in your household?

A Yes, physical disability

B Yes, intellectual disability

C No

13. Do you have any suggestions for improving the census process or additional comments?

.....

.....

.....

.....

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