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# LOAN MANAGEMENT INFORMATION SYSTEM: CASE STUDY OF BUSIA FARMERS

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## DECLARATION

1. ODERO EDRINE STEPHEN, declare that this is my original work and has never been submitted for any award or any other purpose in any University, or academic institution of higher learning.

Signed: .....  .....

Date: .... 21<sup>st</sup> / 11 / 2024 .....

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**APPROVAL**

I certify that this project report is an original work of ODERO EDRINE STEPHEN, was done under my supervision and is ready for submission.

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## **ABSTRACT**

This paper presents a careful study and analysis of an existing manual loan management system at Busia farmers and aimed at designing a web-based Loan management system in order to increase the efficiency. The loan management system is a web-based system business solution which is utilized to simultaneously track sales activity in addition to inventory.

The study was carried out to reduce the problems of inconsistency and inaccuracy of loan and mismanagement of the record due to the existing manual system used. An analysis of the existing manual system was done to get a better understanding of the system.

Hence, Rapid Application Development (RAD) methodology was used in this research to implement an iterative methodology which is suitable for stand-alone applications that can be updated from time to time as may be required by the web-based system. Testing was done in every phase of the development life cycle to ensure that the new system worked properly.

The system was designed and implemented using PHP programming language and MYSQL for the database. This system designed provides a daily, weekly, monthly, and yearly report of all the transactions and other activities such as product sales, customer's registration among others.

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## LIST OF TERMS

**Data:** This is raw facts that have not been processed

**Information:** This is the data that has been processed in such way as to be meaningful to the person or receiver.

**Attributes:** These are particular properties that describe an entity.

**Database management system:** The software product through which user' interact with database.

**Form:** The form in this study is screens that will have seen set up to display or accept information either directly to or from a table.

**Data abstraction:** This hides the internal working of the system from the user.

**Integration of data:** In databases, data are organized into a single, logical structure, with logical relationships defined between associated data entities. This makes it easy for users to relate one item of data to another.

**Information system:** The arrangement of people, data, processes and interfaces that interact to support and improve day to today operations in business as well as support the problem solving and decision makes needs of management and users.

**Abstract:** This is an over view perception of the available and involving ideas

**A many-to-many (M:M) relationship:** It is when for one instance of entity A, there are zero, one, or many instances of entity B and for one instance of entity B there are zero, one, or many instances of entity A.

**A one-to-many (1:M) relationships:** It is when for one instance of entity A, there are zero, one, or many instances of entity B, but for one instance of entity B, there is only one instance of entity A.

**A one-to-one (1:1) relationship:** Is when at most one instance of entity A is associated with one instance of entity B.

**Back-up:** A copy of data stored on a remote site to recover in case of data loss or data corruption.

**Data model:** This is an integrated collection of concepts for describing data, relationships between data, and constraints on the data in an organization.

**Database:** This is a collection of stored, integrated files that can be maintained and manipulated with great flexibility.

**Database Administrator:** The person, responsible for establishing policies and procedures to control and protect a database. He (she or it) works within guidelines set by data administration to control the database structure, manage data changes, and maintain DBMS programs.

**Entity:** This is any tangible or intangible object on which an organization wishes to store data.

**File:** The group of related data or information

**Goal:** This is a desired state that may have a gap from the current state.

**Hardware:** Physical components of a computer system i.e. the monitor, keyboard, hard disk

**Hard Disk:** A storage device in the computer used for storage of data.

**Manual System:** A system that uses a manual means of collecting data, inputting, outputting and storage through the use of manpower.

**Master Files:** A permanent file where all the records are stored.

**Management Information System:** This is a computer-based information system that uses data recorded by transaction processing system (TPS) as input programs that produce routine reports as output.

**Model:** This is a representation of real-world objects and events and their associations.

**Operating System:** This is software that supports a computer's basic functions.

**Operation Level:** This is concerned with day to day running of the organization

**Primary Key:** Is a field in which every entry uniquely identifies its records.

**Process:** An operation performed on data

**Redundancy:** Action of repeating the same data more than once.

**Relational Database:** This is a collection of normalized relations.

**Relational Model:** This is a model where all data is logically structured within relations

**Report:** Is a database object used to display data/information in a print preview format.

**Table:** Table is a database object where all data in a database is stored.

**Time Schedule:** This is the stipulated time period under which tasks are set to be accomplished.

**Security:** Provides the much-needed protection for the system to allow normal functioning

**System:** Refers to a set of interrelated-components that work together in an integrated way to achieve a common goal

## List of Acronyms

FARMERS:	Saving and Credit Co-operative
LMIS:	Loan Management Information System
MIS:	Management Information System.
MIR:	Management Information Requirement.
DBMS:	Database Management System.
E-R:	Entity relationship
DFD.	Data Flow Diagram
GB:	Gigabytes
RAM:	Random Access Memory.
MB:	Megabytes.
SDLC:	System Development Life Cycle.
SSADV:	Structured System Analysis and Design Methods.
MS:	Microsoft access.
IS:	Information System
NF:	Normal Form

# CHAPTER ONE

## 1.1 Introduction

This chapter 'presents the background, statement of the problem, objectives, Conceptual Framework and scope of the study.

## 1.2 Background of the Study

The Busia farmers started as a small financial institution with few employees and clients around 2004. The FARMERS had the objectives of uplifting the Farmers in the villages by giving them short loans and in return it gets little profits front them and now it is one o1 the leading financial institution/ FARMERS in Busia municipality as well as in the whole nation. The Farmers often uses traditional methods like paper, pens, and manual filling to capture and manage data and information about clients' details and this leads to time consuming, when the administrators are trying to arrange every record in a proper way. Since this FARMERS receives many and different clients both around and outside Busia to get loans for personal and project developments and thus the information captured is a lot, and this leads to incorrect, and in accuracy data recording then the administrators get tired during data entry. There is much time Consumed when recording and keeping details about customers leading to time delay and tirelessness of both administrators and clients. If nothing is done. Busia farmers will lose customers, fail to deliver timely services and delay in decision making. However, LMIS has proven to be more reliable, effective and efficient since it allows ease capturing, storage, easy retrieval, easy to back up, and security of the data.

### **1.3 Problem statement.**

Traditional methods of Loan management (use of pens, manual files to capture and manage such records) that are used at most finance services in Uganda including Busia farmers pose difficulties in capturing, storage, retrieval and back up of clients' loan records. Since clients' loan records are kept in paper files and then stacked in open wooden shelves, retrieving a particular record is tiresome and time consuming and there are no security measures to the clients' records. As a result, the FARMERS is not able to timely retrieve client records; carry out proper data analysis, which leads to increased clients waiting time, loss of client data, inaccurate and delayed reporting, leading to delayed and unguided decisions in loan management.

Therefore, it's upon this background that the researcher set out to develop a loan management system to solve the problem of time wastage, and delays in loan managing and processing at Busia Farmers' FARMERS Ltd.

### **1.4 General Objective of the study**

To develop a loan management information system that will improve loan record handling and bring about timely Loan processing.

### **1.5 Specific objectives of the study**

- I. To investigate and gather data about the existing manual system being used at Busia Farmers FARMERS Ltd
2. To analyze the requirements for the new system
3. To design a loan management information system for Busia Farmers' FARMERS Ltd
4. To test and implement the new system.

### **1.6 Scope of the study**

The researcher carried out his research at Busia Farmers FARMERS Ltd located in Busia municipality. The researcher- centered his study to loans department and the research was carried out within 5 months from August to December.

### 1.6.1 Content scope

The study is focused on the way how loan is processed at Busia Farmers' Farmers Ltd. The study takes more interest on finding out who has taken loan, defaulted, and finished paying the loan taken.

### 1.6.2 Geographical scope

The study was carried out in Busia' Farmers FARMERS Ltd located in Busia Municipality along Busia-Mbale Road in Eastern Uganda.

### 1.6.3 Time scope

The study was carried out in the period of five months from August to December 2022. The study looks at how records about loan management and processing are managed at Busia farmers since the FARMERS opened

## **CHAPTER TWO**

### **LITERATURE REVIEW**

The literature review of this project covers previously researched material from different scholars on loan security and management. Through researchers' attempts, various theories on how loan management has been; propagated. These theories produce systems to assist managers in loan management, managing information systems in Microfinance institutions, existing information reporting systems, improving management, reporting and the use of data warehousing efficiently to improve management reporting.

#### 2.1 Strength of the existing management system.

Paper based system is cheap and easy to implement. It is cheap in terms of costs because the staff does not spend a lot of money to purchase paper and files compared to purchasing hardware, software and maintaining them.

##### 2.1.1 Weakness of the existing management system.

The existing management system has a lot of weakness, these include:

Retrieval of clients' record is difficult and time wasting as it takes a lot of time to search for a particular file as they are very many.

Updating of client's record is hard and at times impossible.

Clients' records can easily be misplaced and lost due to the large number of files. There is also space wasting since files are kept in a store that needs a lot of space.

This process is problematic because of the vulnerability for incorrect data entry. Clients' information can only be accessed while at the premises of the Micro Finance

##### 2.1.2 Management information systems

MIS is a system or process that provides information needed to manage organizations effectively.

Management information systems are regarded to be a subset of the overall internal controls procedures in a business, which cover the application of people, documents, technologies, and procedures used by

management accountants to solve business problems such as costing a product, service or a business-wide strategy.

Management information systems are distinct from regular information systems in that they are used to analyze other information systems applied in operational activities in the organization.

Academically, the term is commonly used to refer to the group of information management methods tied to the automation or support of human decision making, e.g. Decision Support Systems, Expert systems, and Executive information systems. For any organization's success, MIS plays key role.

Another criticism cited under Directed Credit Programs relates to the transaction costs for both the lender and the borrowers caused by direct credit programs.

## 2.2 Related Research

The expenses incurred by the borrower in complying with the directed credit program monitoring and proposing Requirements entailed in managing multiple lines of credit boost these costs.

Costs include opportunity costs of time spent in navigating cumbersome borrowing procedures, transportation costs on monitoring, costs of providing acceptable collateral and in some cases bribes to influence lending, Desai and Mellor (1993). There is therefore need to build a system that can help to minimize this cost through the web technology.

## 2.3 Web-Based System/Applications

According to archive systems (2008) web-based systems refer to software or services such as ASPEN 360 that are offered over the WWW and use a web browser to access them. For web-based application, the correctness of services provided by every component was the majority significant thing and the integrality and consistency guarantee the complete system to work suitably. Tn current WBA consider tranquil in their fast inflating phase; therefore, the researchers are looking web-based software development, web-based software maintenance, and web-based software (application) testing and other WBA implement real world computer application which is looking to maintain user satisfaction.

### 2.3.1 Web overview

The world wide web started in 1990 at the conseil European pour le Recherché Nuclear (CERN) in Switzerland's in that time the laboratory was facing difficulties while they are sending important documents and graphics via the internet therefore, they were needed something better than simple file transfer.

Tim Bemers-lee was working in CERN when he developed the World Wide Web portion of the internet (webopedia, 2008). Web is a subset of the internet that uses images, multimedia elements and hypertext navigation to communicate information globally. It's a connection of computers worldwide whose hosts serein and transit data among computer users.

### 2.3.2 Web Research

This study included conducting web research on the different MFIs and articles on pride Microfinance.

### 2.3.3 Web application

Casals (2005) defined the web application as a software application that will deliver its functionality to a user from a web sewer, through a network such as the World Wide Web or intranet.

A web application is a collection of logically connected web pages managed as a single entity, a web site, on the other hand, will contain one or more that will result from different contracts with the customer (Auckland, 2004). The fundamental purpose of the web application is to facilitate the completion of one more task (Baxley 2003).

The software and database exit on a central sewer rather than being installed on the desktop system is accessed over a network. web-based application is the ultimate way to take advantage of today's technology to enhance efficiency, and give the opportunity to access information from anywhere at any time saving money and improving interactivity.

### 23.4 Web Loan management System

According to Securities Exchange Act of 1934, security is property, which is pledged as collateral for a loan. It is a binding pledge made by lender to the borrower to make a loan usually at a stated interest rate within a given period of time for a given purpose, subject to the compliance of the borrower to stated conditions. Collateral security is an additional security supplied by the borrower to obtain a loan.

Most commonly used to mean some security in addition to the personal obligation of the borrower to repay a loan.

There are two kinds of loans that the groups are getting. First is agricultural loan and second is term loan. Presently most of the loans disbursed to SHGs are agricultural loans that are of one- year duration. A SHG can get a loan from the bank if it has saving of minimum of 50000 Ugandan shillings. Generally, SHO takes six to twelve months to reach the required savings. The rate of interest on the loan is 24 percent if the installment becomes due for more than three months then the interest rate becomes 36 percent annually.

#### 2.4 Pride Management Information System

The microfinance sector is also quite diverse in its use of information systems. Generally, there are the following three types:

#### 2.5. Manual System

Some MFIs still rely on manual systems, which involve maintenance of records in forms and ledgers. Organizations having manual systems are either small Micro-credit programs or NGOs.

##### 2.5.1. Semi- Automated System

More than 50% of IVIFIs are operating in a semi-automated mode. Within this category, the spreadsheet is the common tool being used either in conjunction with a manual system or with an MIS application that does not full fill the information requirements of the MFI. The majority of non-regulated MFJs will semi-automated systems.

##### 2.5.2. Fully Automated System

Few MFIs are fortunate enough to have a fully automated and integrated MIS full filling the whole information requirements of the organization. Such systems will be existent with banks or regulated MFIs.

#### 2.6 Loan Management System

The LM System is a complete multi-user loan management system. It was created to be used to control the day to day transactions as well as offer comprehensive management information. This will be specifically

designed to meet the unique requirements of organizations with Installment Debtors. The system can be used by banking institutions, micro-lenders, financiers as well as retail institutions using installment sale type transactions e.g. Furniture companies, computer companies.

The system was designed to cater for the tracking of a deal from the quoting stage right through to the settlement or natural expiry. It will handle all the unique requirements of this industry such as repossessions, electronic payments, structured collections. radiances etc. All these transactions

### **Loan management system**

The database collects information about Customers who borrow money from a company. Every month the customer must pay at least the capital or the interest rate. According to Barry Williams (2003), where he continues by saying that management system accommodates various types of savings plans, designed to allow one-time entry of the customers' information which can be tied to as many accounts as necessary.

According to Pollock (2002), a loan records management program is advantageous as it enables the organization to retrieve required information easily, which facilitates transparency. accountability and democracy; Enables the organization to perform its functions successfully and efficiently; created and maintained Authoritative and reliable records in an accessible, intelligent and usable manner to support the business and accountability requirements of the organization; ensures elimination of unnecessary duplication of records by maintaining only those records it really needs for functional purposes; exercise controls to ensure that only authorized persons have access to the information, thus preventing information and/or the records themselves from being stolen or damaged. This ensures the protection of privacy and confidentiality, and prevents the inappropriate disclosure of information that could harm the organization or infringe the privacy rights of individuals.

According to PSI (2012), Organizations create, retain, and preserve records so that they can be used for better service delivery. If a system user cannot locate a required document at the required time, it might be as well as a non-existing record. As such, an effective records management program should have in place systems (manual or computerized) that can locate and retrieve records in a reliable and timely fashion to meet the needs of the users.

### **2.2 Requirements for a new system**

The requirements for designing a Loan management information system are categorized as functional and non-functional requirements.

### **Functional requirements**

The functional requirements are the activities and services the system must provide.

- i. The system Authenticates System users
- ii. The system allows users to capture, save and update client banking records and loan records
- iii. The system allows the users to view loan report and Client payment records
- iv. The system calculates payment denominations for loans

### **Non-functional requirement**

These requirements describe general conditions the software system must meet to satisfy the needs of the users and are not bound to the specific functions of the system. These units provide an indication about the most significant issues and explain their relevance

According to Cisco (2005), managing organizations' data today involves a large amount of paper. Information stored in paper charts is difficult to access, takes up costly space dedicated to chart storage, and can impact on quality of care. On the other hand, computerization can be beneficial in the following ways: - electronic records provide effective distribution of information to care givers at the point of care to support higher quality of records with increased efficiency; Management can access charts and histories without having to search files or wait for chart pulls; Connected records applications, including electronic records, that streamline information and communications at the point of care are critical to organizations under pressure to cut costs, increase productivity, and improve staff/ employee management. According to Klein, (2006). There is an opportunity to transform records and improve safety by better leveraging information technology to improve the efficiency, accuracy, and effectiveness of the system. However, adoption has been shown and

the results have been mixed up. If deployed incorrectly, without well-conceived process improvements, IT systems can do just the reverse; leading to critical delays or mistakes

### **2.3. Designing of Loan management information system**

A lot of care needs to be taken while designing a computerized records management information system. O'Brien (2002) recommends the following steps while developing a records management information system: - Review the existing system; Define the data needs for relevant units within the organization; Determine the most appropriate and effective data flow; Design the data collection and reporting tools; Develop the procedures and mechanisms for data processing; Develop and implement a training program for data providers and data users; Pre-test. and if necessary, re-design the system for data collection, data flow, data processing and data utilization; Monitor and evaluate the system; Develop effective data dissemination and feedback mechanisms; and evaluation of the system.

### **System Development Life Cycle**

System development life cycle is the overall process of developing information systems through a multi-step process from investigation of initial requirements through analysis, design, implementation and maintenance.

There are many different models and methodologies, but each generally consists of a series of defined steps or stages. These stages are well documented.

Systems Analysis and Design is a proven methodology that helps both large and small businesses reap rewards of utilizing information to its full capacity.

The methodology that will be used is Rapid Application Development which is a software development process that allows usable systems to be designed or built in as little as 60-90 days, often with some compromises. Internet site; Reference 9.

System development life cycle is central to the development of an efficient information system because it is the process of understanding how an information system can support business needs, designing the system, building it, delivering it to users

Development cycles optimize speed, unity of vision and purpose, effective informal communication and simple project management, by keeping the analysis focused on business rules. Both analyst and user are forced to communicate about the business details and not about what the system should do, but what, from a business perspective, the system needs to support.

To converge early towards a design, acceptable to the customer and feasible for the developers and also to limit a project's exposure to the forces of change to save development time, possibly at the expense of economy or product quality, Rapid Application Development is a better method to use.

### **Database management system**

A database management system (DBMS) is a software product through which users interact with a database. According to Philip J. Adamski (1987); database system management and design. The actual manipulation of the underlying database structures is handled by the DBMS

According to David Kroenke (1992); where DBMS is commercial software (and occasionally, hardware and firmware) system used to create, maintain and provide controlled access to the database and also to the repository.

Forms; forms in this study will be a screen that will have been 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. Reports will be used to pre-design database that loads out on the page in a specific order.

### **2.4 Testing and Implementing of the new system**

According to John et al. (2005) before implementing a loan records management information system, a testing environment should be established and test plans/scripts developed. Once configured, the system needs to be tested for its technical capabilities and functionality in the testing environment, and if reviewed it should be retested.

### **Testing the prototype system developed**

This is used to test the whole system by linking together all the programs subsystems. Bugs were recorded and then categorized in terms of priority they were fixed and those with less priority were addressed in the follow-up's releases. The following were also carried out.

**a. Performance Testing**

This process was carried out to validate that all the response times or transaction periods specified in the functional specifications can be met by the system especially when it is fully loaded. The process involved timing how long the system takes to respond to a user request. Timing normal case paths through processing and exception cases.

**b. Regression testing**

This was used to ensure that the correction during the system test have not introduced new bugs, and test the key functions.

**c. Acceptance testing.**

This was used to prove to the client that the system, meets the business requirements agreed upon. in the functional specifications. The test data was replaced with live data provided by the client. The client recorded all errors, discrepancies and other aspects. They were discussed with the developer whereby; the errors were corrected by the developer and the changes were implemented.

**Implementation of Loan management information system**

**a). Data take-on and conversion**

Small bits of data from the old system were transferred safely to the new system. This was done by Users entering data; the developer had to ensure that data entry errors are controlled. Data conversion by using a developed program that transfers data from the old format to the new format was done.

**b). User Training**

User Training was conducted and covered all the functions of the system to ensure that the users were competent in the use of the system. The training was done by the system developer.

### **c). Installation and change over.**

#### **Installation on site**

Hardware was brought and the system was installed (this included operating system, and the loan management information system)

#### **System change over**

Direct method was used, the advantage is that it is **the** cheapest and there is a clear break between the old and the new system. However, apparently both the old and the new system are being used concurrently until such a time when the users will be very sure and confident about the functionality of the new system that the old system will get entirely replaced by the new system. (Williams et al. Sawyer, 1999)

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This section looks at how the system is designed together with the methods and tools to be used during system development. The methodology is based on the design and the interfaces of the system and how the system is used to meet its requirements.

It is also based on the methods used by the researcher to gather 'information and data from various people especially those responsible for loan management system request. The methods of representing data are also considered by the researcher and design techniques to develop the system.

#### **3.2 Study Population**

The study population was the employees and clients of Busia Farmer 's FARMERS Ltd the information obtained by the researcher was documented. Manager', loan officers and cashiers were also studied in the study together with customers who were present at the moment.

#### **3.3 Sample size**

A sample size of fifteen (15) people was carried out which included; the manager, three (3) Cashier's, two (2) loans officer and nine (9) Clients. They were interviewed and observed by the researcher on how the loan management process was carried out.

#### **3.4 Data Collection Methods**

31 used a variety of methods to gather facts about the existing system and these methods included interview, questionnaire and observation. The researcher used the data anal information collected to design and development the new system.

### **3.4.1 Interviews**

Nine (9) Clients and two (2) Cashiers of Busia Farmers FARMERS Ltd were interviewed privately where the researcher asked questions as the interviewee responded. This helped me to obtain facts about the current system. Each one expressed their' concern about the current system and recommended on what should be done to improve on their efficiency in a new system.

### **3.4.2 Observation**

Like observation method enabled me to get clear information about the existing system since I was able to see personally what was taking place during transaction at the Farmers. The researcher based his observation on how loan information was managed and the process used in transaction. The researcher also observed how data was recorded and the methods used in storing data.

### **3.4.3 Questionnaire**

This included draft of questions about existing loan management system. The researcher was able to draft a questionnaire which was filled in by employees of Busia Farmers SACC Ltd.

### **3.5 Data analysis**

The researcher used Microsoft excel for data analysis. The data collected was analyzed using the Microsoft excel 2007 and tabulated. This was supported by graphs and pie charts during the presentation of data.

### **3.6 System design**

System design is a process of defining the architecture, components, modules, interfaces, and data for system requirements. Physically the system was designed using Html, Php, Bootstrap, Font Awesome for interfaces and database connection, and the database was designed using MYQLI. And logically the flow of the system is represented through entity relationship (E-R) diagrams, data-flow model and structured models to represent the interaction between the user and the system. The Entity-relationship (E-R) was used to get the relationships within the tables.

### **3.7 System Validation and Verification**

System validation and verification was intended to show that the system conforms to its

specification and meets the requirements of the system users. It involved checking and reviewing processes for proper and secure system performance.

### 3.6 System **Testing**

The researcher tested the system designed and developed, to check whether it provided requirements to meet the users' needs. The researcher used various system testing methods which included; Unit testing where individual components were tested, module testing in which related collections of dependent components were tested, the sub-system testing in which modules were integrated into sub-systems and tested. The focus here was on interface testing and system testing.

### 3.5 System implementation

System implementation is the construction of the new system and delivery of the system into production (that is the clay to clay business or organization operation) after successful verification and testing the system was recommended for implementation by the researcher.

**CHAPTER FOUR**  
**DATA PRESENTATION AND ANALYSIS**

**4.1 INTRODUCTION**

This chapter presents the out comes from the study that the researcher carried out during the research. The chapter contains the data presentation, analysis and interpretation of findings in line with objectives of the study stated in chapter one. The general objective of study was to develop a loan management information system that will improve loan record handling and bring about timely Loan processing.

**4.2 Data presentation**

**4.2.1 The age distribution of respondents.**

This shows the distribution of respondents that participated in answering the questions including the clients and employees **in** the FARMERS

The findings on the age distribution are presented in the table below.

Age	frequency	Percentage
<20	3	20.0%
20<30	2	13.3%
30<40	6	60.0%
40<50	4	26.7%
>50 above	0	0.0%
Total	15	100%

Table I: Table showing age distribution of respondents

The above information is shown graphically using a graph. It includes frequency and age that show how information was obtained during the research.

The age distribution graph, frequency and percentage.

The age distribution graph, frequency and percentage.

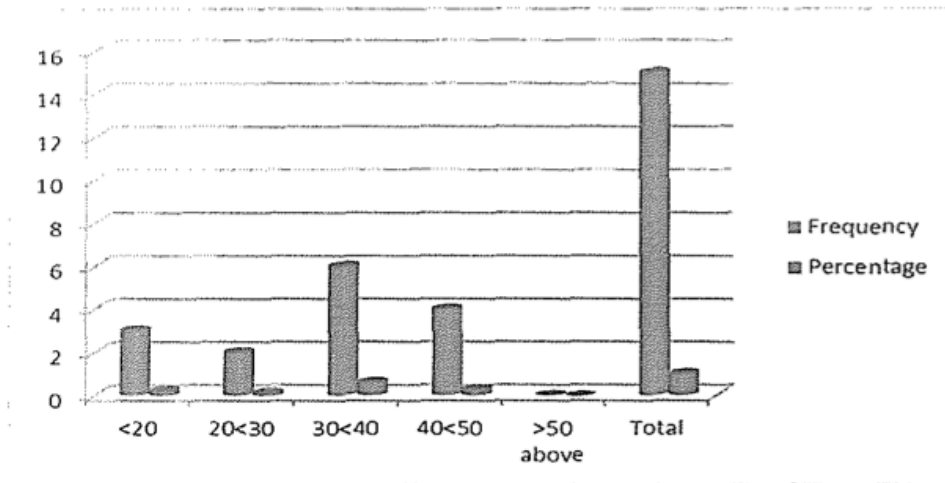


Figure 1 Showing the age distribution graph, frequency and percentage.

Majority of the respondents were in the range of 30 to 40 which accounts 60% of the respondents that were given questionnaire and interviewed. This showed the researcher that most of clients between those ages get loans for different purposes and data is kept on a particular loan purpose

#### 4.2.2 The gender of respondents

The gender of respondents during the study was also analyzed and recorded and the findings on the respondents were as follows.

Gender	Frequency	Percentage %
Male	9	60%
Female	6	40%
<b>Total</b>	<b>15</b>	<b>100%</b>

Table 1 Table showing the gender of respondents

The above information shown in table form is illustrated using a line graph after analysis was taken and the researcher analyzed the information collected and presented it in form of bar' chart.

A bar chart showing the frequency and percentage of respondents.

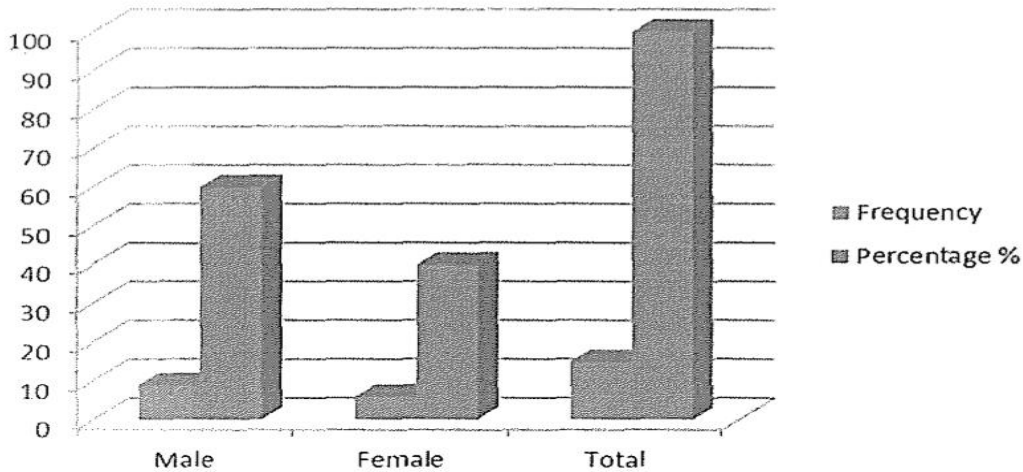


Figure 2 A bar chart showing the frequency and percentage of respondents.

According to the data analyzed, it shows that the majority of the respondents were male. This was so because male frequently access Farmers facilities because of many responsibilities according the interviews method of data collection

#### 4.1.1 Education level of employees

Education	Frequency	Percentage
PIED	0	0.0%
54asters	0	0.0%
19egree	2	60.0%
Diploma	3	40.0%
Certificate	0	0%
total	5	100%

Table 2 Table showing education level of employee respondents in the FARMERS

Bar chart for employees' level of education

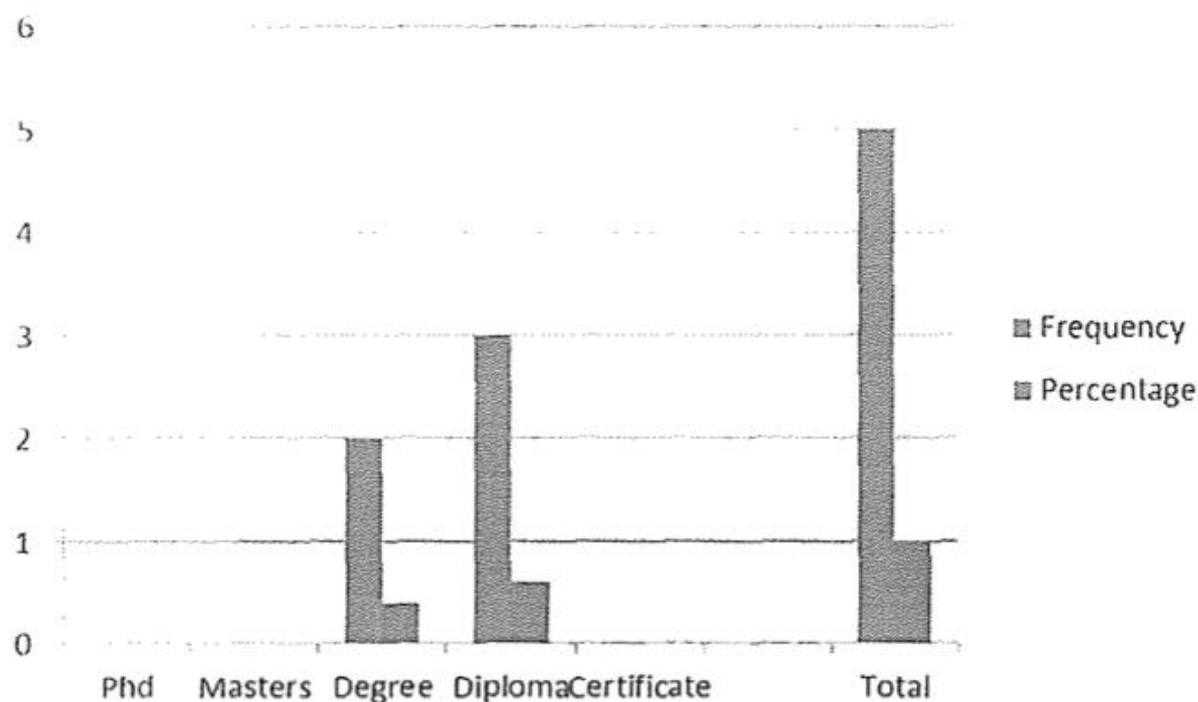


Figure 3: illustrates a bar chart for employees' level of education

The 40% of respondents were leaving degrees. This is because the main objective was focused on to which people can be competent with the system once it is developed and implemented.

#### 4.1.1 Occupation respondents

Occupation	Frequency	Percentage
Manager	1	17.0%
Loan officer	3	50.0%
Cashier	2	33.0%
Total	6	100%

Table 3 Table showing the occupation of respondents

The pie chart shows the percentage of occupation of respondent in the Farmers and the biggest percent was the administrator 's. This implies that the loan officer determines the request of the client

The pie chart of the occupation of respondent

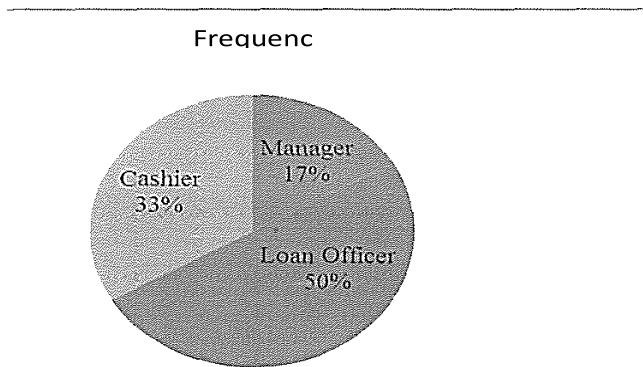


Figure 4 shows the pie chart of the occupation of respondents.

The 60% of the respondents were loan officers and is accounted for by the fact that the study was mainly focused on them to see how loan was managed.

#### 4.1.1 Respondent's view about the efficiency of the coming system

Rating	Frequency	Percentage
Excellent	1	6.0%
Good	3	19.0%
Fair	4	31.0%
Poor	1	6.0%
Don't know	6	38.0%
Total	15	100%

Table 4 Table showing the efficiency of the coming system

The majority 38.0% of the respondents did not know anything about the system, this is so probably because of not knowing what the new system is all about and other thought that they will lose their job once the system is implement, 19.0% thought that the system will bring quick services to the Farmers whereas 6.0% also tied between the system being excellent and poor. From observation of the findings, the current system is average and therefore there is need to come up with a system whose majority efficiency rating will be good to excellent.

This Chart shows efficiency of the coming system

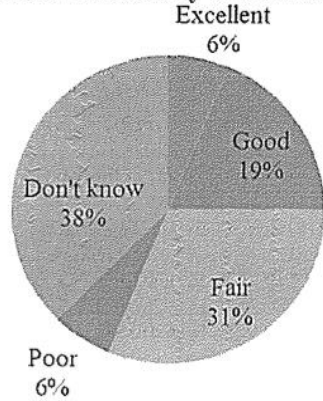


Table 5 : shows the pie chart of the efficiency of the coming system

#### 4.1.1 List of respondents

These were the people who participated in answering questions among them were those given questionnaires and those that at same time appeared for scheduled interviews.

Below is the table showing the list of participates during the research study.

Name	Duty held	Gender	Age
Obbo Stephen	Manger	M	35
Ssekandi John	Customer	M	34
Odero Dickson	Loan manager	M	45
Apio Jacky	Cashier	F	26
Tumisime Joab	Administrator	F	28
Nyawere Claistine	Client	F	19
Segiyya David	Client	M	20
Sekito R	Loan officer	M	31
Atiihura Mai y	Cashier	F	29
Okech Joseph	Loan Officer	M	30
Naikoba Nuwainaya B	Client	M	40
Nakibuka patience	Client	F	20
Asiinwe Moses	Loan Administrator'	M	38
Arinaitwe Brain	Client	M	31

Nyakato Shallon	Client	F	19
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Table 6 Table showing the list of respondents during the study

## 4.2 Analysis of existing system

Loan management system at Busia Farmers' Farmers Ltd still uses manual file system (use of pens, papers, and manual files) whereby loan officers have to register clients' details daily in books and books kept in shelves for later retrieval.

### 6.2.1 Weaknesses of the existing system

One of the weaknesses of existing system is the time it takes to access data. It can take minutes if not hours to locate a few files in a large paper filling system. It is very difficult to enforce security checks and access rights **in** current system, since application program are added in adhoc manner. It is not easy to retrieve information using the existing system.

### 6.3 The designed system

The system designed was a loan management information system which would help in storing a lot of data/information and carry out automatic report generation. The new system was more advantageous than the old system **in** the following ways; the new system generates reports within less time and with fewer errors as compared to the existing system. The new system used computerized methods in capturing and processing of loan records which were cheaper as compared to the old system which used papers and pens that take a lot of time and space during processing and capturing and consumes a lot of space.

All the records/particulars like (clients' records and loan records) concerning clients were captured electronically in the new system stored in the database for the efficiency of the system.

#### 6.3.1 User Requirements

The primary users of the system are the manager, the loans officers, and cashier and all users of the system are required to login with user name and password to be granted access to the system. The authorized users have certain roles that determine their usage. The user requirements for each user were identified and are as follows:

Manager will (adds users, deletes users, view customer records, view reports). Loans officers (add customer records, view customer records, view reports). Cashier (issue cash to customers, view transaction records, view reports).

### **6.3.2 System Requirements**

These requirements are categorized into functional and none functional requirements

#### **a). Functional Requirements**

The functional requirements are the activities and services the system must provide.

- The system enables users to capture loan records
- The system Authenticates System users
- The system allows users to capture client banking records
- The system allows the users to view loan report
- The system saves and updates records
- The system allows users to view Client payment records
- The system calculates payment denominations for loans

#### **b). Nonfunctional Requirements**

Nonfunctional requirements are a description of other features, characteristics and constraints that define a satisfactory system.

- **Maintenance:** The system allows for future developments to be conducted and additions to the systems functionality as seamlessly as possible. And it also allows the administrator to have access to the database
- **Cost Reduction:** The system would reduce on most of the costs like stationary costs and enforce tight security of the data.

- Easy and Faster Update of the Database: Updating of the database will be faster and more effective.
- Usability: The system allows users to view and edit information on the same page.
- Enhance Decision-making: The FARMERS's information flow will be done automatically thus decision making will be fast.
- Security: The system shall only allow authorized users into the system to use, view or modify any part of the system.

### 6.3.2 System Requirements

#### a). Hardware Requirements

**These are the hardware and minimum requirements required for the system to successfully be implemented**

Hardware	Minimum requirements
Processor	Intel® or Pentium (III, IV), Cyrix, AMD Athlon, 1.8 GHz or higher.
Memory (RAM)	Minimum 1.00 GB recommended or higher.
hard disk space	Minimum 73.8 MB recommended or higher
Resolution:	1024x768 or higher

*Table 7 shows hardware requirement of the system*

#### b). Software Requirements

**These are the software and minimum requirements required for the system to successfully be implemented**

Software	Minimum requirements
Operating System	Windows XP, 7,8,10,11
Database management system	Microsoft access 2000 or higher version,

Antivirus	Avast & Smadav 2022, Rev 10.1
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*Table 8 shows the software requirement of the system*

### **4.3.3 System Design**

This is the phase, which follows the data analysis phase after the analysis phase was completed successfully, the information obtained in system analysis was used to produce a design specification for the new system by building a representation of the new system. It normally involves two broad stages namely logical design and physical design. At this point the interaction between the users and the developers is a key factor to a successful system, which meets the required information requirements determined by the system analysis.

#### **a). Stages of System Design**

Logical design is concerned with conversion of logical records structures to a data model supported by a database management system.

Physical design transforms the logical design material into real computer work by designing the inputs, outputs, and processes. Below are some of the diagrams that were used in designing the system.

In the process of designing this system the researcher used Flow Chart, Data Flow diagrams. Data Decomposition Diagrams and Entity relationship diagram

#### **A Flow Chart of the Loan Management Information System**

The development process of the loan management information System took four steps. The system took the designer through several alterations, repeating step 3, to refine and enhance the prototype before arriving at the final solution.

flow chat of LMIS

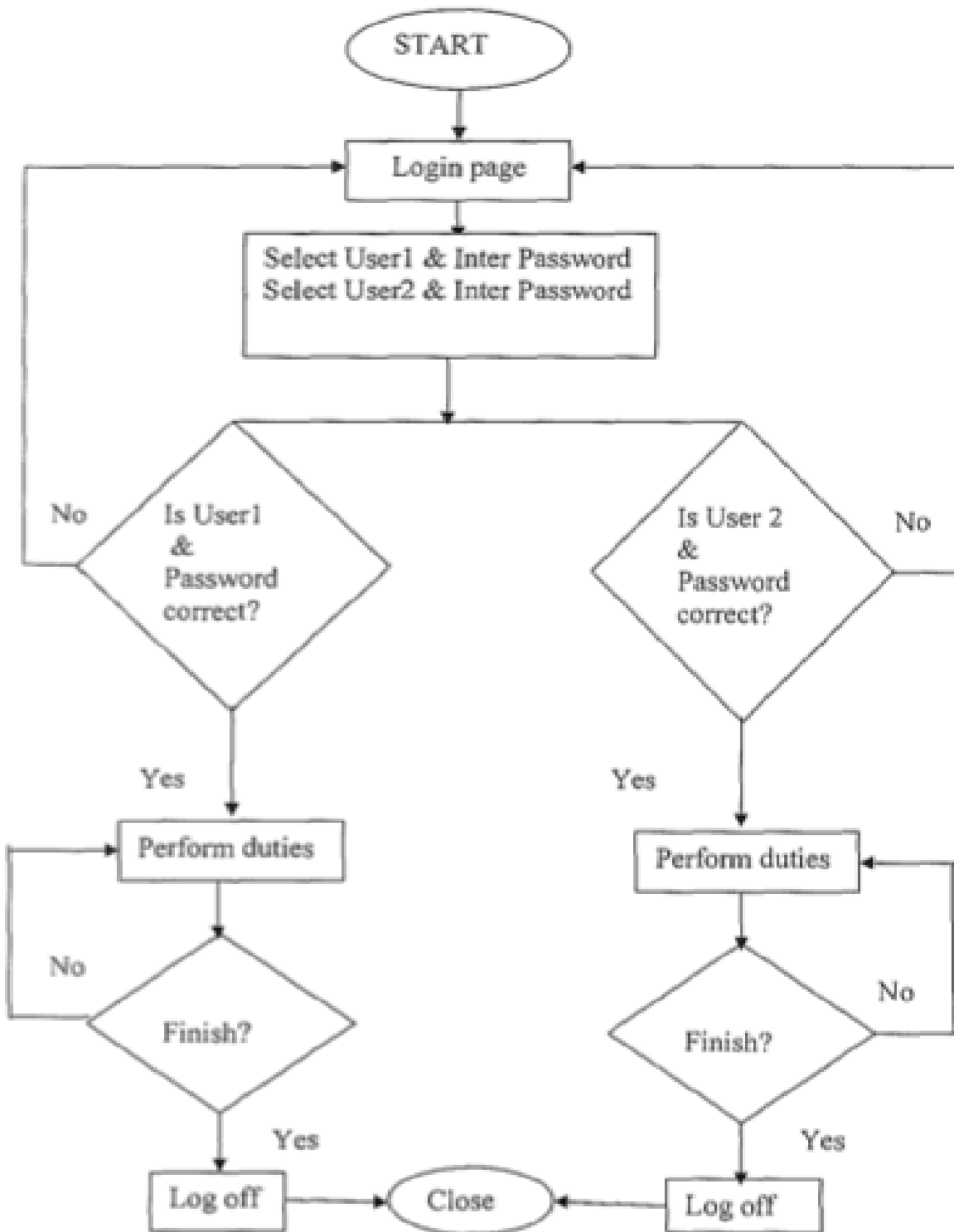


Figure 5 Shows the Flowchart of LMIS

### Dataflow Diagram

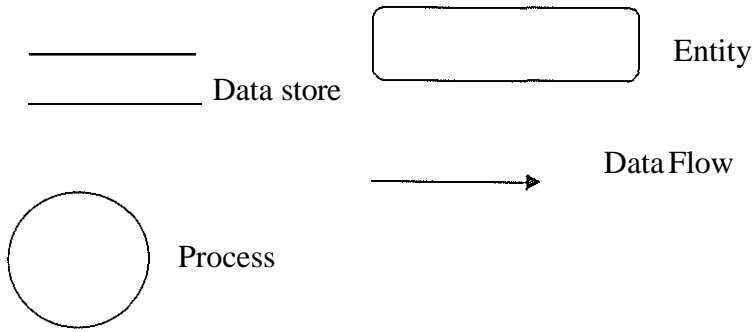


Figure 6 Shows Dataflow Diagram

### Entity-Relationship

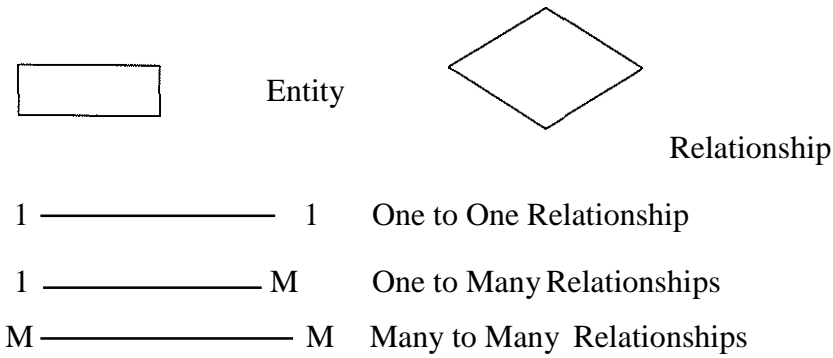


Figure 7 Shows Entity-Relationship

### Entity-Relationship diagrams

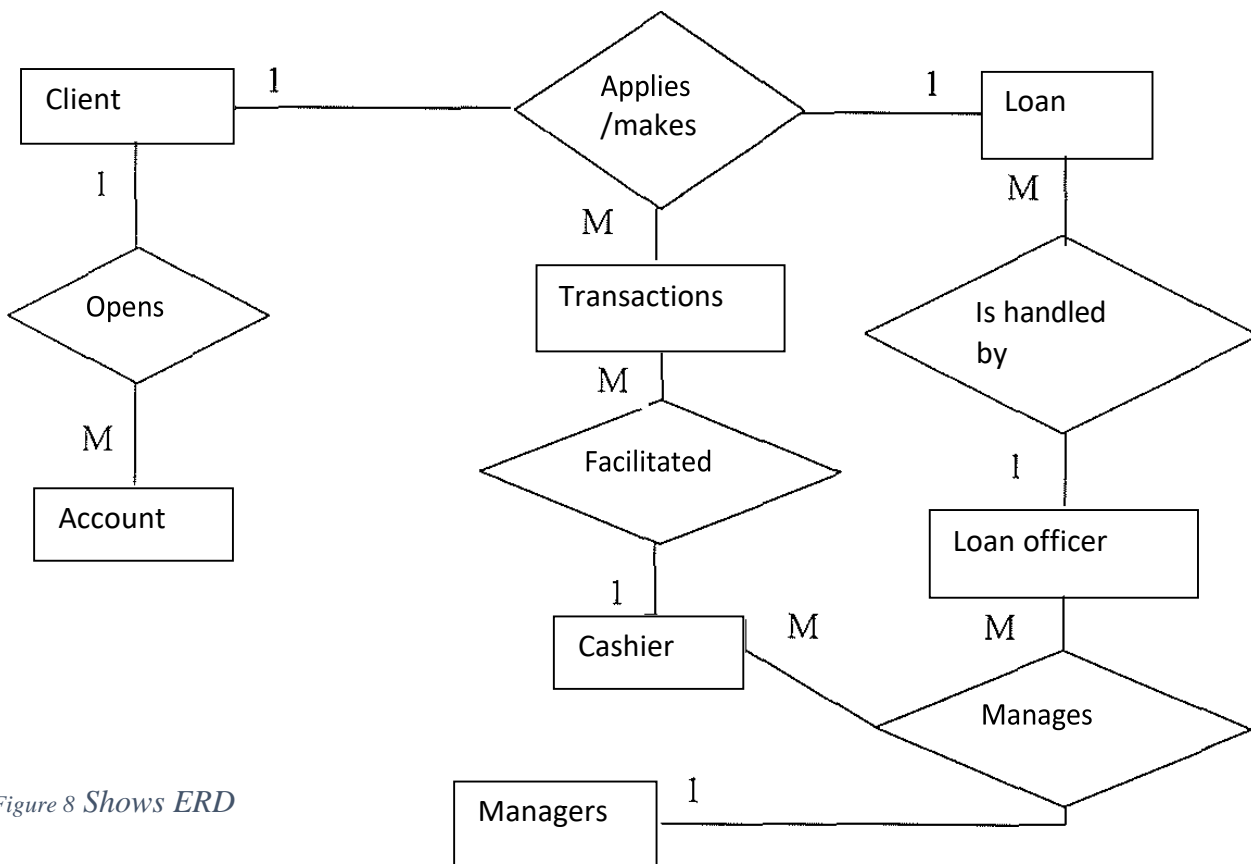


Figure 8 Shows ERD

b). Data Dictionary for Tables

Table of account type

This is the table that shows field name, data type, size of the entry and the Description of account type table in the system database

Table 9 Table of account type

<b>FIELD NAME</b>	<b>DATA TYPE</b>	<b>SIZE</b>	<b>DESCRIPTION</b>
ID	AutoNumber	10	Account type Identification
ACCOUNT TYPE	Text	20	Account type
DESC	Text	50	Description

Table of address

This is the table that shows field name, data type, size of the entry and the Description of address table in the system database

Table 10 Table of address

<b>Field Name</b>	<b>Data type</b>	<b>Size</b>	<b>Description</b>
ID	Auto Number	10	Address Identification
LOG TEXT	OLE Object	20	XXXXXXXXXX
LOG PIC	Text	50	Logo of Farmers
TEXT 1	Date/Time	10	Loan payment schedule
TEXT 2	Text	6	XXXXXXXXXX
Address	Memo	255	Farmers contact address

### Calculate Table

This is the table that shows field name, data type, size of the entry and the Description of calculation table in the system database

Field Name	Data type	Size	Description
ID	Auto number	10	Identification
IWTES	Number	20	Interest rates
NEW I	Number	50	Amount
NEV*2	Number	05	Period
NEW3	Text	50	Months
NEW4	Text	15	Amount

Table 11 : Calculate Table

### Clients Table

This is the table that shows field name, data type, size of the entry and the Description of clients table in the system database

Field Name	Data type	Size	Description
ID	Auto number	10	Identification
ACC OUNT NO	Text	20	Account number
SURNAME	Text	50	First name
OTHERNAME	Text	50	Last name
GLNDER	Text	06	Client's sex
DOB	Text	50	Date of birth
NATIONALITY	Text	15	Nationality
MOBILE	Text	20	Phone number
ADDRESS	Text	15	Home address
L'EXT KIN	Text	30	Name of next kin
OTHERS	Number	40	Others
OTHERS 1	Text	40	Others 1
PIC	OLE object	30	Client photo

*Table 12: Clients Table*

### Payment **Table**

This is the table that shows field name, data type, size of the entry and the Description of payment table in the system database

Field Name	Data type	Size	Description
ID	AutoNumber	10	Identification
LOAN ID	Text	20	Loan identification
DATE OF REPAYMENT	Text	50	Date of repayment
PRINCIPAL AMOUNT	Number	06	Principal Amount
FUNCTIONAL AMOUNT	Number	50	Functional Amount
INTERSET AMOUNT	Number	50	Interest Amount
DATE OF PAYMENT	Text	30	Date of payment
OVERDUE DAYS	Text	25	Number of days
OVERDUE CHARGES	Text	25	Amount
MM/YYYY	Text	15	Month/Years
YYYY	Text	15	Year

Table 13 payment Table

### Loan details table

This is the table that shows field name, data type, size of the entry and the Description of Loan details table in the system database

Field Name	Data type	Size	Description
LOAN ID	OLE Object	10	Loan identification
ACCOUNT NO	Number	15	Account number
LOAN TYPE	Text	10	Type of loan
LOANING DATA	Date/Time	10	Date and time
INTEREST RATE	Text	10	In addition, Amount
PAYMENT	Memo	250	Monthly Payment

Table 14: Loan details table

## **CHAPTER FIVE**

### **SYSTEM IMPLEMENTATION**

#### **5.0 Introduction**

This is the construction of the new system and the delivery of the system into production i.e. day-to-day operation.

#### **5.1 System Coding**

In this stage, the whole system is converted into a computer understandable language. Coding the new system is an important stage where the defined procedures are transformed into control specifications with the help of a computer language. This is also called the programming phase in which the programmer converts the program specifications into computer instructions, which are referred to as programs. The programs coordinate the data movements and control the entire process in a system. It is generally felt that the programs must be modular in nature. This helps in fast development, maintenance and future change, if required.

This system has been developed using Html, Php, Bootstrap, Font Awesome for interfaces and database connection was designed using MYQLI as database management software, has been used at the back end. These are user-friendly programs and easy to train.

Database (MYQLI) allows accessibility of data and retrieval of data easily. It allows elimination of duplicated data and also security of the database is concrete.

#### **5.3 Using this Loan Management Information System**

This application is a menu-driven loan management information storage and retrieval system designed for computerized management of structured, numerical and non-numerical data. Although some features of this system require some experience with computer, once the system is installed it may be used by persons having little or no prior computer experience.

#### **5.4 System overview**

This application allows you to manage structured databases both numeric and non-numerical.

## **5.5 System functions**

The major functions provided by this system are that it allows users:

Enter new records into a given file, modify, correct, or delete existing records

Automatically build and maintain fast access to each record in order to maximize retrieval speed Display reports either in details or summaries according to your information requirements

Set security at user-level thereby allowing you to maximize the security of the data.

## **5.6 Installing the system**

### **The Setup**

This application is on a Compact Disk. To install the system, insert the CD into the CD-ROM drive of your computer, double-click on my computer, then locate the CD, double-click on system folder, locate the setup icon and double-click on it. The installation wizard will start. Follow the instructions until the process is completed.

## **5.7 Database structure**

Although the database may appear as a single file of information in the actual fact it consists of a number of logically related but physically distinct tables. The management of the database is the responsibility of the developer and the users won't normally have to know the structure in details in order to operate this application. However, some basic knowledge of the functions associated with this system will help the users to understand the system.

## **5.8 Getting Started with Loan Management Information System**

To start using the Loan Management Information System/application, the login screen /window appears as shown in Figure 1 below, ready for you to enter your user name and password.

You can login by entering your user name and password respectively in the spaces provided in the login dialog box.

## Login Screen

### Loan Management System

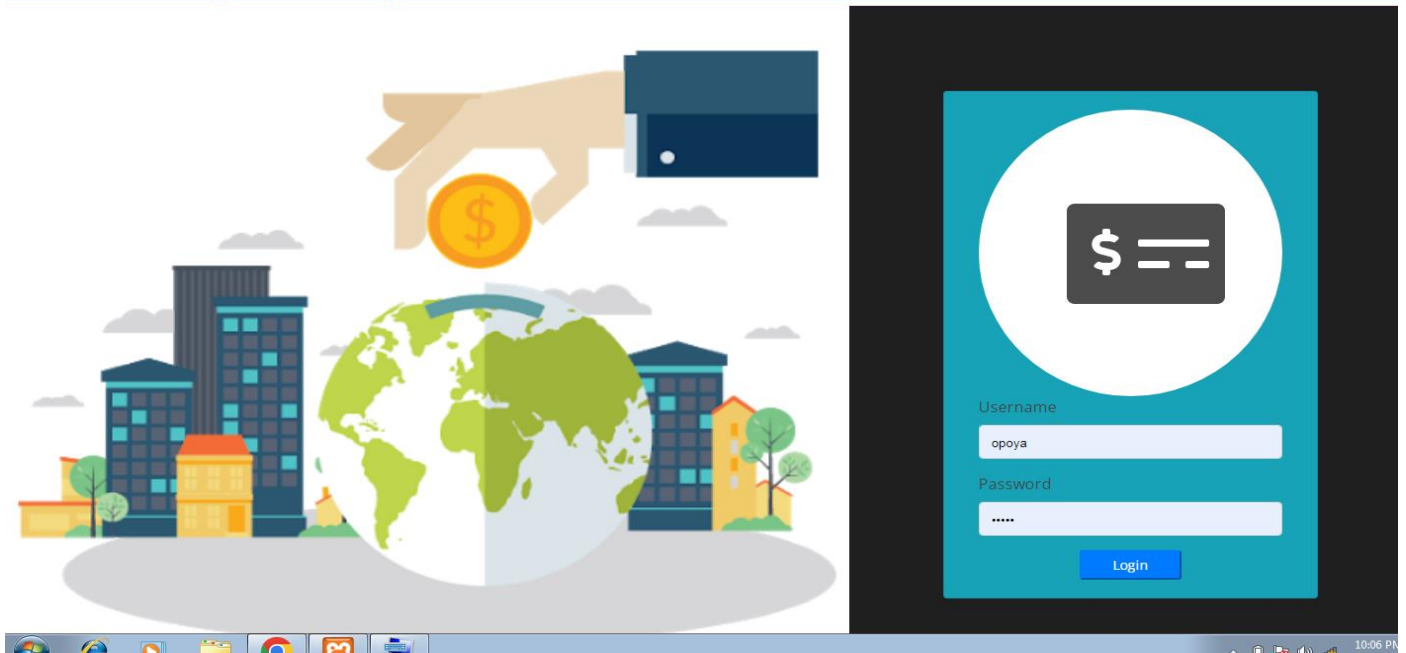


Figure 9 *Login Screen*

Click on the Login button after selecting your username and inserting in password to gain access to the system. When you enter the correct password, the system will continue loading and then display the following screen showing the different processes.

### 5.8.1 Main Menus

You select the operation to be performed by looking at the relevant command from the menu that the system displays on the screen. A command is a word or sentence that tells the application to perform a certain operation, a menu on the other hand is a list of commands from which you will make your choice. Menus are displayed from the main menu.

To select a command, first click on the appropriate menu from the main menu with the left mouse button (this will display the commands available on the selected menu, then point to the desired command and click the left mouse button. Follow the instructions there on the screen to accomplish the task.

## Main Menu Screen

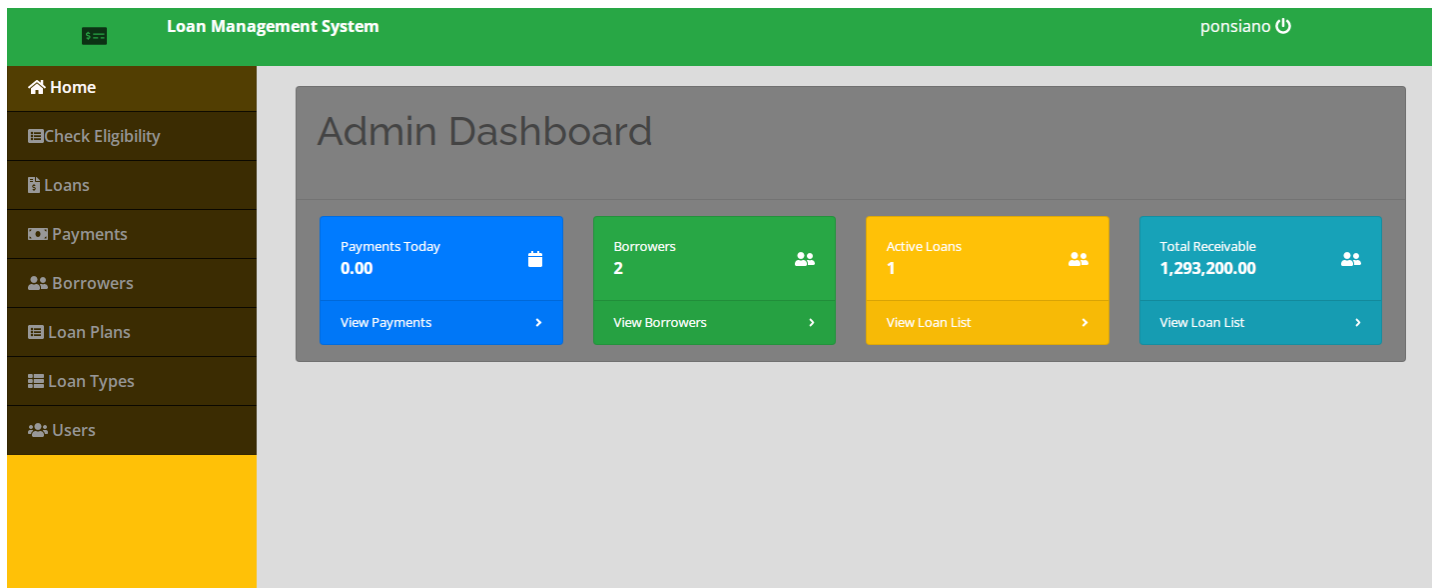
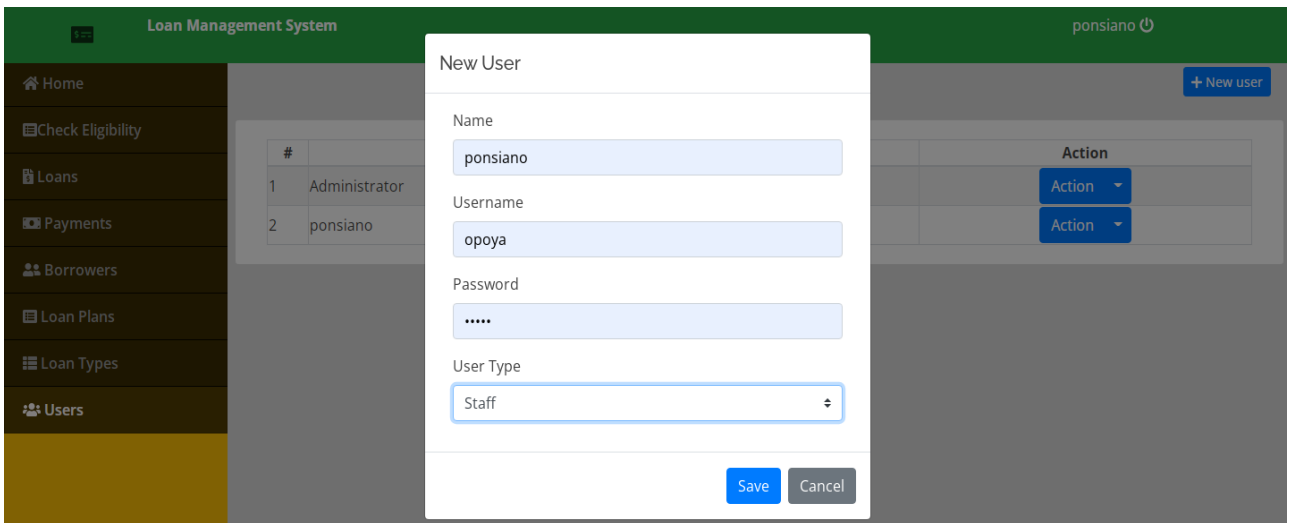


Figure 10: Main Menu Screen

### Commands Available on the Main Menu

- Home
- Check Eligibility
- Loans
- borrowers
- payments
- loan type
- loan plan



registration form for adding new system user

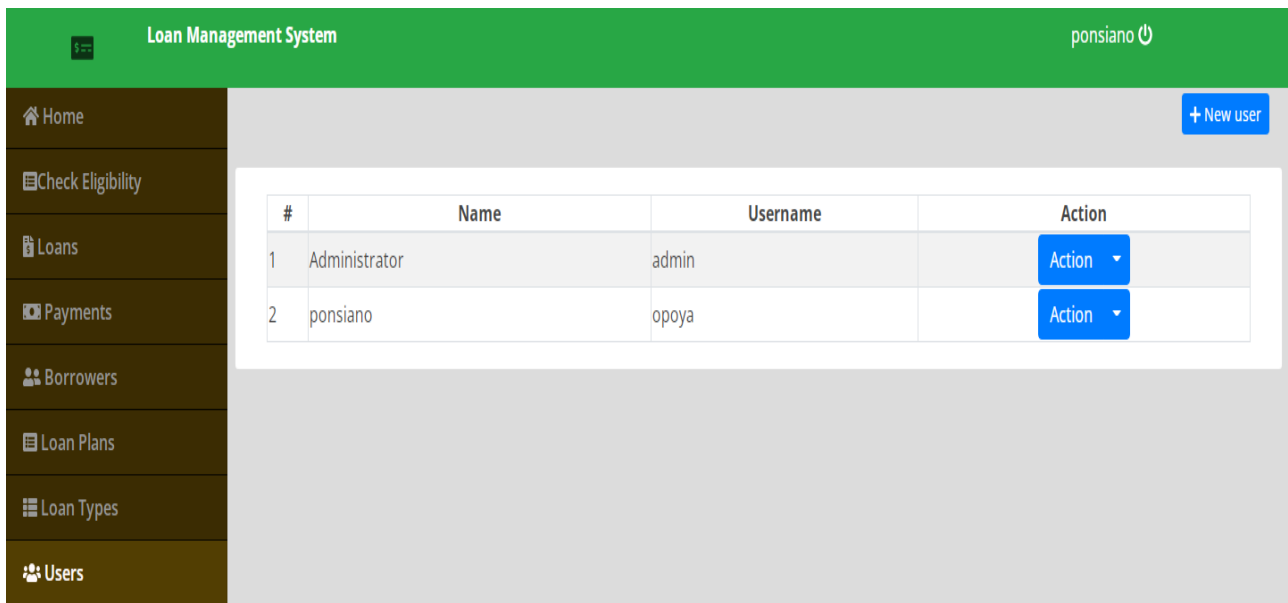


Figure 11: shows registration form for adding new system user

This is form used by FARMERS administrator to add new system users

### 3.8.1.2 Clients

Registration form for adding new clients

Figure 12: *Clients' Main Registration Form*

this is used by the FARMERS administrators to track down records pertaining to a client's background and general information (physical address and contact person) and client's confidential information. This file stores all Clients' information and allows for easy access to each piece of information.

### 3.8.1.4 Loan Detail form

Figure 13: *shows loan details form*

This form is mainly used by loan officer for adding, storing, and editing data related to loan at FARMERS

### 5.8.1. Payment form

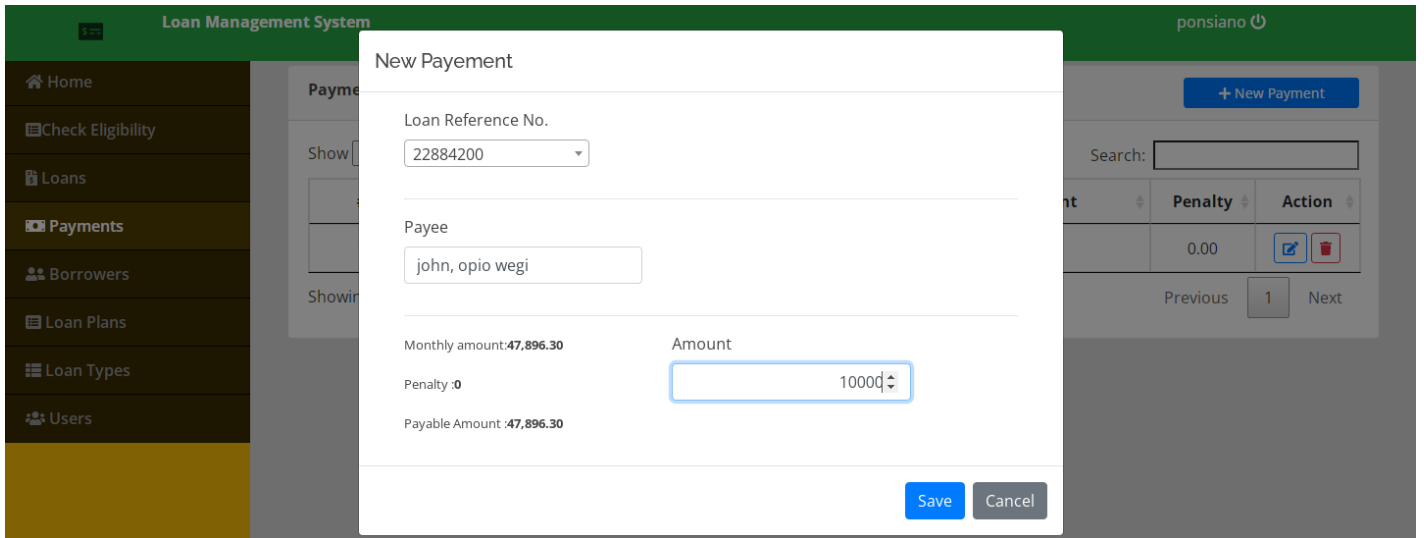


Figure 14 Payment form

This form is mainly used by Cashier for billing clients, capture, search, delete, and update data related to payments made to the FARMERS.

### 5.8.2 Dialog boxes

In some cases, the system will require additional information before it can execute a command. The user will have to provide this information by selecting the available option or filling in the blanks in a special Windows/form called dialog box.

### 5.8.3 Searching

Retrieval of records from this system is done by clicking on the search button on the form associated with the request after typing the search ID in the text box provided. When you click on the search tool, the system manipulates the request and displays the details of the record of a particular search.

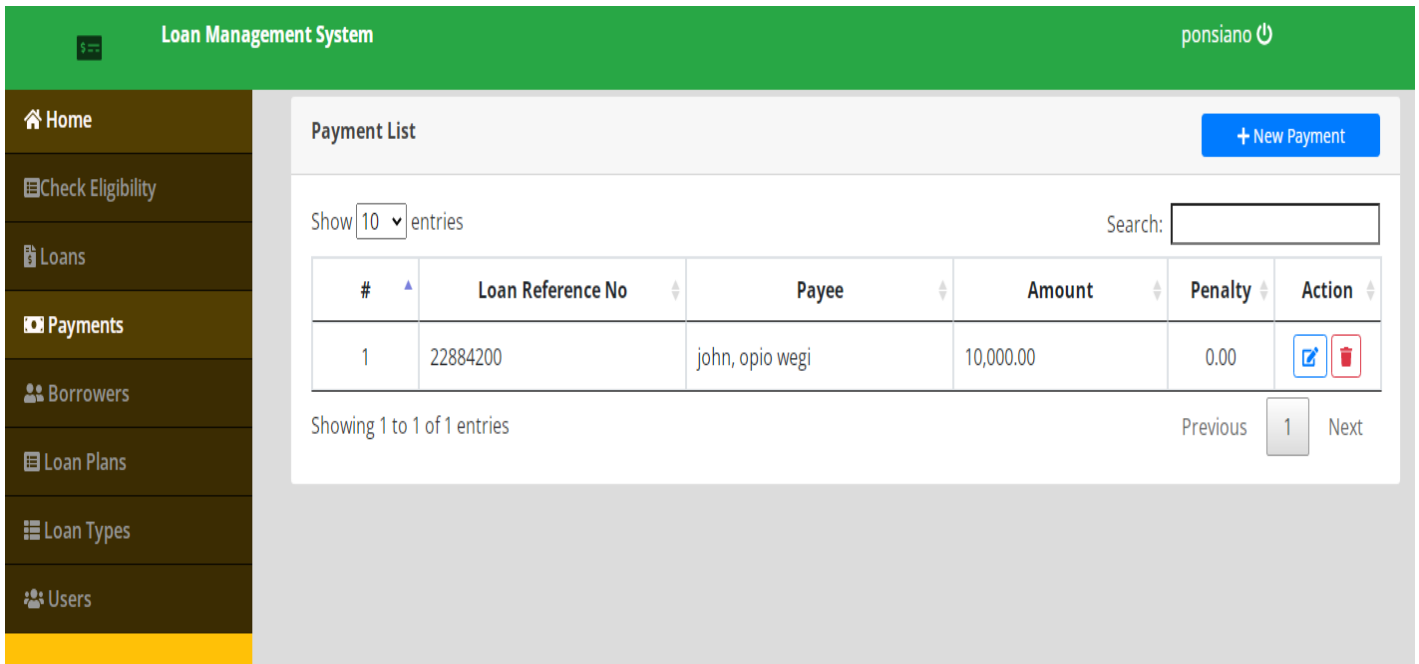
### 5.8.9 Data Entry

When entering data into forms you can move from one field to another by clicking into the next field using the mouse. The grayed data fields on the data entry form imply that the data is entered automatically by the system. You can close the data entry screen form by clicking the done/close button on that form. You can move from one menu option to another by using the mouse to click your choice the selected option opens the respective window.

## REPORTS

The system generates a number of reports. The reports are classified according to the data outputs that are required from the Loan Management Information System.

### Loan payment schedule



The screenshot displays the 'Loan Management System' interface. On the left is a dark sidebar menu with options: Home, Check Eligibility, Loans, Payments, Borrowers, Loan Plans, Loan Types, and Users. The 'Payments' option is highlighted. The main content area is titled 'Payment List' and includes a '+ New Payment' button. Below the title, there is a 'Show 10 entries' dropdown and a search box. A table with one entry is shown, with columns for #, Loan Reference No, Payee, Amount, Penalty, and Action. The entry shows a loan reference number of 22884200, payee 'john, opio wegi', and an amount of 10,000.00. The 'Action' column contains icons for edit and delete. At the bottom of the table, it says 'Showing 1 to 1 of 1 entries' and includes 'Previous', '1', and 'Next' navigation controls.



#	Loan Reference No	Payee	Amount	Penalty	Action
1	22884200	john, opio wegi	10,000.00	0.00	 

Figure 15: Loan payment schedule

All reports, regardless of the category can be displayed on the screen for viewing as a softcopy before printing the hardcopy on the printer. A report is displayed on the screen automatically immediately you click it's option on the menu.

## **Log off Program Option**

If you want to log off this program click on the log off option on the Multiple-Document Interface form. When clicked, this option logs off the Loan Management Information System thus taking you back to the log in form. There are various ways of exiting this application but it is recommended that you use this option so as to ensure that all unsaved changes of our database are saved before exiting the system.

## **5.9 System Testing**

Before actually implementing the new system into operations, a test run of the system is done removing all the bugs, if any. It is an important phase of a successful system. After the above codifying of the whole program of the system, a test plan should be developed and run on a given set of test data. The output of the test run should match the expected results. The following test run were carried out:

### **5.9.1 Unit Testing**

This is the first stage of testing; this was done by using written test plan and prepared test data. The path consisted of a number of tests runs such as valid paths through the codes. For each test run, there was a list of conditions tested, the test data used and the expected results. All the forms that are on the system were tested against the test plan and the conditions.

### **5.9.2 Integration Testing**

This was used to test the interfaces between programs in the same functional area. Each program was linked to other programs with which it interacts. The whole process was in a specified sequence and within specified response time. The integration between the program interfaces created in Visual basic 2005.net and the database created in Microsoft Access was fully tested to ensure that they effectively link

## **5.10 Training of users of the system**

After the system was validated, tested and seen giving its functioning correctly and meeting the users' requirements. The users were not trained, because the system was not yet maintained in the bank delivered to its end users.

### **5.11 System conversion**

The fact that the relationship between the existing system and the current system is little, the Researcher recommends parallel conversion strategy. This is a conversion strategy where both systems are kept running for some certain period of time until the new system is endorsed as perfect system. This has an added advantage that in case the new system contains some unidentified errors and breakdown; the old system can always be resorted too. This strategy has also been recommended because according to the findings by the researcher, most of the likely users of the system don't understand it hence the need for them to first get expertise with it and thereafter they can do away with the old system

## **CHAPTER SIX**

### **DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

#### **6.0 Introduction**

In this chapter, the researcher looks at the summary of the findings, conclusions, and recommendations of the study on designing loan management information system software.

#### **6.1 Discussion**

According to what was gathered in the data analysis, the total number (15) of respondents agreed that the current loan management system that is used at Busia Farmers' FARMERS Ltd was only manual.

The researcher found out that there were problems in accessing loan records at the FARMERS. One respondent indicated that they have a habit of creating another file for clients whenever they fail to locate a file in time which is sign of record management deterioration hence leading to duplication of loan records at the FARMERS.

The system was designed basing on the provided facts which included information obtained from questionnaires, interviews and what the researcher observed. The designed system is a computer-based system that completely removes paper work i.e. all the loan records keeping is done by a computer.

In the designing of the system, data flow diagrams and entity relation diagrams became very relevant and helpful. They clearly helped the researcher to make a clear plan on which the construction of the system started. Microsoft visual basic 2005.net was used to make very good graphical user interfaces while Microsoft access became very instrumental in developing the database. Testing of the system was aimed at checking for errors existing in the system or capability of a program or system and determining that it meets its required results. Unit testing methodology was done using sample data collected from selected users and the system met the required specification.

#### **Challenges Encountered During Project Development**

- Power failures at times led to loss of data that would cause delays on the time schedules.
- Time was limited and the researcher had to work over time to meet his objectives.

- Inadequate finance for meeting costs such as, printing, Internet surfing, and purchasing of storage devices like flash disks.
- Computer viruses at one time destroyed the computer which led to loss of the work.
- Fixing appointments with the management and the users of the system was a big problem

since most of the time they were not available to give the required information or they were very busy.

## **6.2 Conclusion**

In conclusion therefore, the study was successful despite the limitations and challenges that were encountered during the study especially lack of enough funds to facilitate requirements needed to develop the system. On the other hand, the researcher acquired skills in project management and development and at least the researcher can make claims of having minimal experience in designing database systems and gained few tips of being project designer and developer.

## **6.3 Recommendation**

Researcher recommends that, whoever picks interest in working on any related projects should have a clear understanding of the problem, develop a clear understanding of fact-finding tools like questionnaires, interviews, observation, documentation analysis and many other. He/she needs to know which tool is appropriate given the available circumstances for example. Interviews could be used if and only if the researcher has enough time, when qualitative information is required, and when the number of respondents is not very large.

Questionnaires could be used in situation where the respondents are geographically scattered and when the sample size is very large in cases where problems of language barrier exists. However, this will yield good results when it is used along with other data collection methods.

Researcher recommend that the system development life cycle be used as the main development methodology. Because it is easier to follow than other methodologies such as Prototyping, Joint Application Design (JAD), Rapid Application Development (RAD) which required special tools.

In addition, those other methodologies like prototyping require using of special tools which can be expensive or even hard to use.

Whenever a project is to taken up, a well detailed schedule is needed to guide the researcher throughout the study.

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