A SACCO LOAN MANAGEMENT SYSTEM: THE CASE STUDY OF KISOBOKA FARMER'S SACCO LTD

A PROJECT REPORT SUBMITTED TO THE FACULTY OF ENGINEERING, DESIGN AND TECHNOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY OF UGANDA CHRISTIAN UNIVERSITY

May, 2024

UGANDA CHRISTIAN UNIVERSITY
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DECLARATION

We declare that this is our original work and has never been submitted for any award or any other purpose in any University, or academic institution of higher learning.

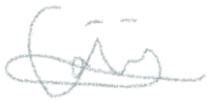
TAIMWA KEVIN

Signed:  Date: 23rd/04/2024

ADRUPIO GETRUDE

Sign:  Date:23rd/04/2024

NAKINTU PRISCILLAR

Sign:  Date:23rd/04/2024

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APPROVAL

I certify that this project report is an original work of the team members**, Taimwa Kevin, Adrupio Getrude, and Nakintu Priscilla** done under my supervision and is ready for submission.

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ACKNOWLEDEGEMENT

We would like to appreciate all the help and support given by our parents, brothers, and sisters throughout the entire course.

We wish to thank our supervisor Mr. Opio Solomon for his supervision and guidance that has enabled us to come up with this project.

Special thanks go to Mr. Mugisha Brian who helped us during the coding part of the system, he played a very big role and I gained a lot from him.

Finally, we would like to thank our lecturers and classmates whom I have shared with all kinds of challenges, and happiness as far as school life is concerned and our patience has made us succeed in our course of study.

ABSTRACT

The SACCO Loan Management Information System is a computerized database of financial information organized and programmed in such a way that it produces regular reports on operations for every level of management in a SACCO; it is usually also possible to obtain special reports from the system easily.

The general objective of the study was to design a loan management information system that could improve loan record handling and bring about timely Loan processing.

The study's specific objectives of study were to investigate and gather data about the existing manual system being used at Kisoboka Farmers SACCO Ltd, analyze the requirements for the new system. Develop a loan management information system for Kisoboka Farmers' SACCO Ltd, and test and implement the new system.

After gathering the requirements, entity relation diagrams and data flow diagrams were used to design the loan management information system. Microsoft Visual Basic 2005.net was used to create user interfaces and Microsoft Access was used to create the database.

The SACCO loan management information system developed authenticates System users and enables them to capture and store loan records and client banking records, the system allows the users to view loan reports and Client payment records, also the system calculates payment denominations for loans [1].

The SACCO loan management information system reduces the burden of over-compiling papers and the need for more shelves which reduces congestion in Kisoboka Farmers' Sacco Ltd [2].

Contents

LIST OF FIGURES

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

an instance of entity B.

Back-up: A copy of data stored on a remote site to recover missing data 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.
The languages that we used include; java, CSS, Python Flask, and MySQL.

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 the 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: This 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 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 ABBREVIATIONS.

SACCO:	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.
SSADM:	Structured System Analysis and Design Methods.
MS:	Microsoft access.
VB:	Vision Basic.
IS:	Information System
NF:	Normal Form
UI:	User Interface.
APIs:	Application Programming Interface.
LTD:	Limited.

CHAPTER ONE

1.0. Introduction

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

1.1.1. Background of the Study

Kisoboka Farmers' SACCO Ltd is stated as a small financial institution with few employees and clients around 100 [1]. The SACCO has the objective of uplifting the Farmers in the villages by giving them short loans and, in return, it gets little profits from them. As a result, it has become one of the leading financial institutions [1]. The SACCO operates in Lugazi municipality as well as in the whole nation [4]. The SACCO often uses traditional methods like paper, pens, and manual filling to capture and manage data and information about clients' details, leading to time-consuming processes for administrators [1] [5]. Since this SACCO receives many different clients both around and outside Kisoboka farmer's group to obtain loans for personal and project developments, the amount of information captured is substantial, resulting in incorrect, improper, and inaccurate data recording. This, in turn, leads to tiredness and fatigue among administrators during data entry [5]. The process of recording and keeping details about customers consumes a significant amount of time, leading to time delays and exhaustion for both administrators and clients [5]. If nothing is done, Kisoboka Farmer's SACCO Ltd will lose customers, fail to deliver timely services, and experience delays in decision-making [1]. However, implementing a Loan Management Information System (LMIS) has proven to be more reliable, effective, and efficient, as it allows for easy capturing, storage, retrieval, backup, and security of data [1].

1.1.2. Problem statement.

Traditional methods of Loan management (use of pens, and manual files to capture and manage such records) that are used at most finance services in Uganda including Ishaka Farmers' SACCO LTD pose difficulties in capturing, storage, retrieval, and backup of clients' loan records. Since clients' loan records are kept in paper files and then stacked on 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 SACCO is not able to timely retrieve client records; and carry out proper data analysis, which leads to increased client 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 Kisoboka Farmers' SACCO Ltd.

1.1.3. General Objective of the study

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

1.1.4. Specific objectives of the study

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

1.1.5. Scope of the study

The researcher carried out his research at Kisoboka SACCO Ltd located in Lugazi municipality. The researcher centered his study on the loans department and the research was carried out within 3 months from January to April.

1.1.5.1 Content scope

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

1.1.5.2. Geographical scope

The study was carried out m Kisoboka Farmers SACCO Ltd located in Lugazi Municipality along Kampala Jinja Road in Central Uganda.

1.1.5.3. Time scope

The study was carried out in the period of four months from January to April. The study looks at how records about loan management and processing are managed at Kisoboka Farmers· Sacco **Ltd** since the SACCO opened.

LITERATURE REVIEW

1.2. Introduction

The literature review includes what other researchers have discussed and highlighted about Loan management information systems. The researcher also highlighted various management systems in different fields related to loan management information systems such as library book management systems to expand on his idea of study.

1.2.1. Investigation and gathering of data about the existing manual system

The loan management information system provides a complete process of how a loan is obtained from Sacco. It is a comprehensive solution for managing loans that covers all stages of the loan cycle including loan orientation, underwriting, servicing collections, and portfolio management reporting.

SACCO 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; creates and maintains 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 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.

1.2.2. 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.

- The system Authenticates System users
- The system allows users to capture, save, and update client banking records and loan records
- The system allows the users to view loan reports and Client payment records
- 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 indicate 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 records 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 caregivers 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

1.2.3. 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; Pretest. 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 evaluate the system.

System Development Life Cycle

The 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 the 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.

The 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 a 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 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.

1.2.4 Testing and Implementing 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 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 did not introduce new bugs, and to 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 were 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 changeover.

Installation on site

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

System changes 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, both the old and the new systems 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 be entirely replaced by the new system. (Williams et al! sawyer, 1999)

CHAPTER TWO

METHODOLOGY

2.0. Introduction

The development of a SACCO loan management system will follow the Agile software development methodology. Agile is a flexible and iterative approach that emphasizes collaboration, adaptability, and rapid prototyping. The Agile methodology allows for continuous feedback and improvements throughout the development process, ensuring that the final product meets the needs and requirements of the users.

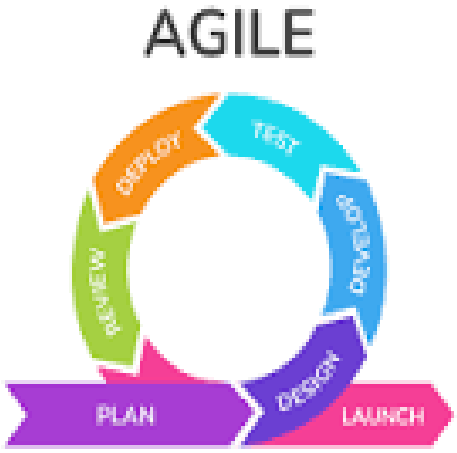


Figure 1

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 requests. The methods of representing data are also considered by the researcher and design techniques to develop the system.

2.1. Study Population

The study population was the employees and clients of Kisoboka Farmers SACCO Ltd and the information obtained by the researcher was documented. Managers, loan officers, and cashiers were also studied in the study together with customers who were present at the moment.

2.2. Sample size

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

2.3. Data Collection Methods

The researcher used a variety of methods to gather facts about the existing system and these methods included interviews, questionnaires, and observation. The researcher used the data and information collected to design and develop the new system.

2.3.1. Interviews

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

A pie chart of the interviews made.

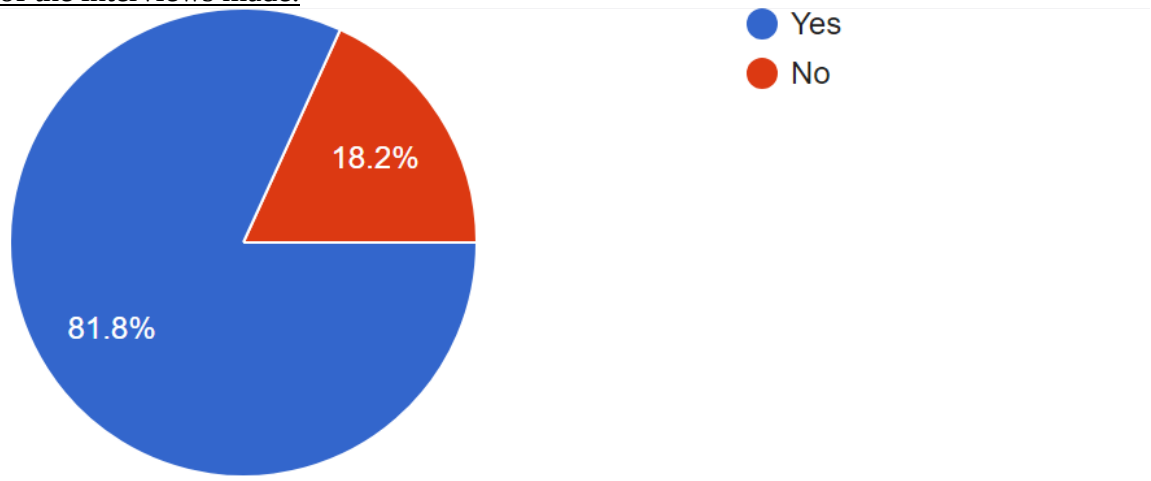


Figure 2

2.3.2. Observation

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

2.3.3. Questionnaire

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

2.4. Data analysis

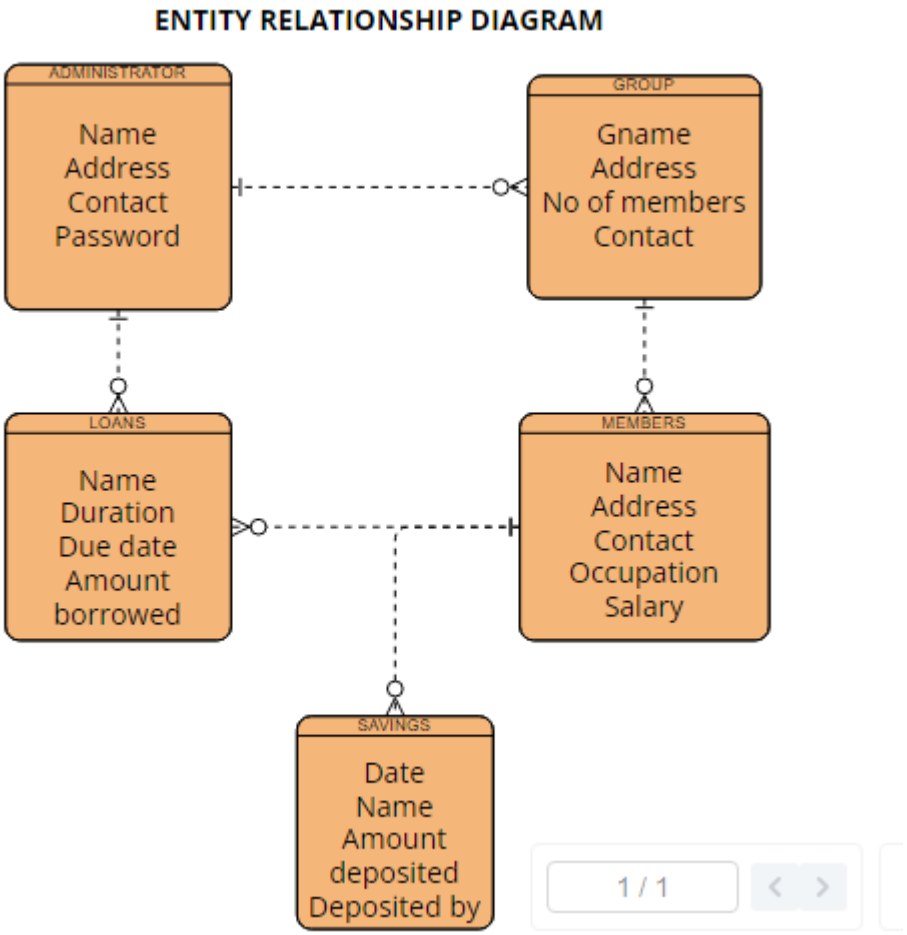
The researcher used Microsoft Excel for data analysis. The data collected was analyzed using the Microsoft Excel 2007 and tabulated. This was supplied by graphs and pie charts during the presentation of data.

2.5. 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 Visio basic 2005 .net for interfaces and database connection, and the database was designed using Microsoft Access. This involved forms and Tables. logically the flow of the system is represented through entity-relationship (E-R) diagrams, data-flow models, 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.

Entity relationship diagram of a SACCO loan management system.



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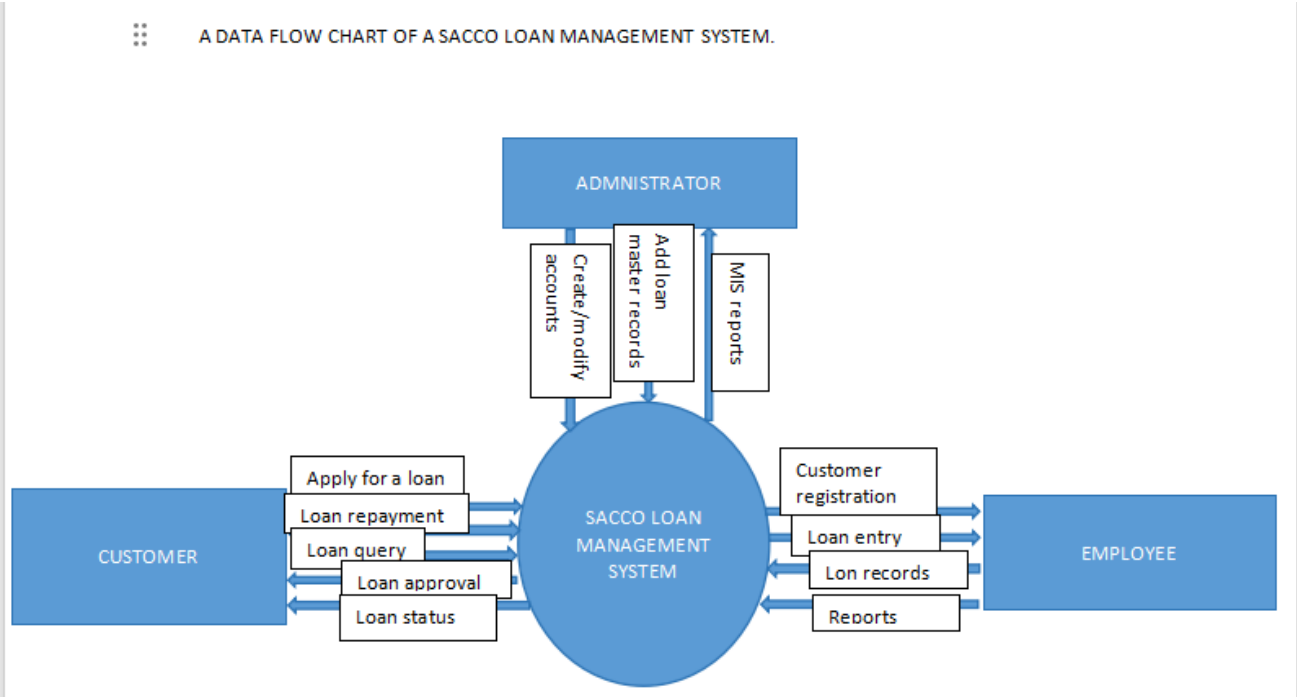

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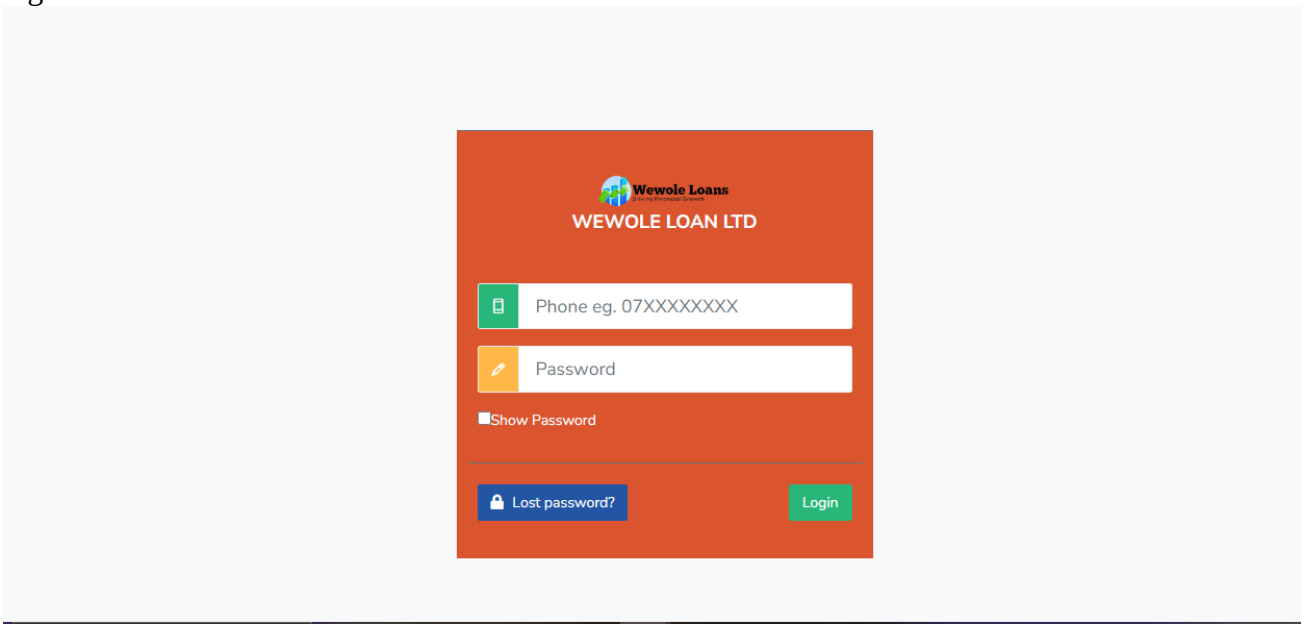

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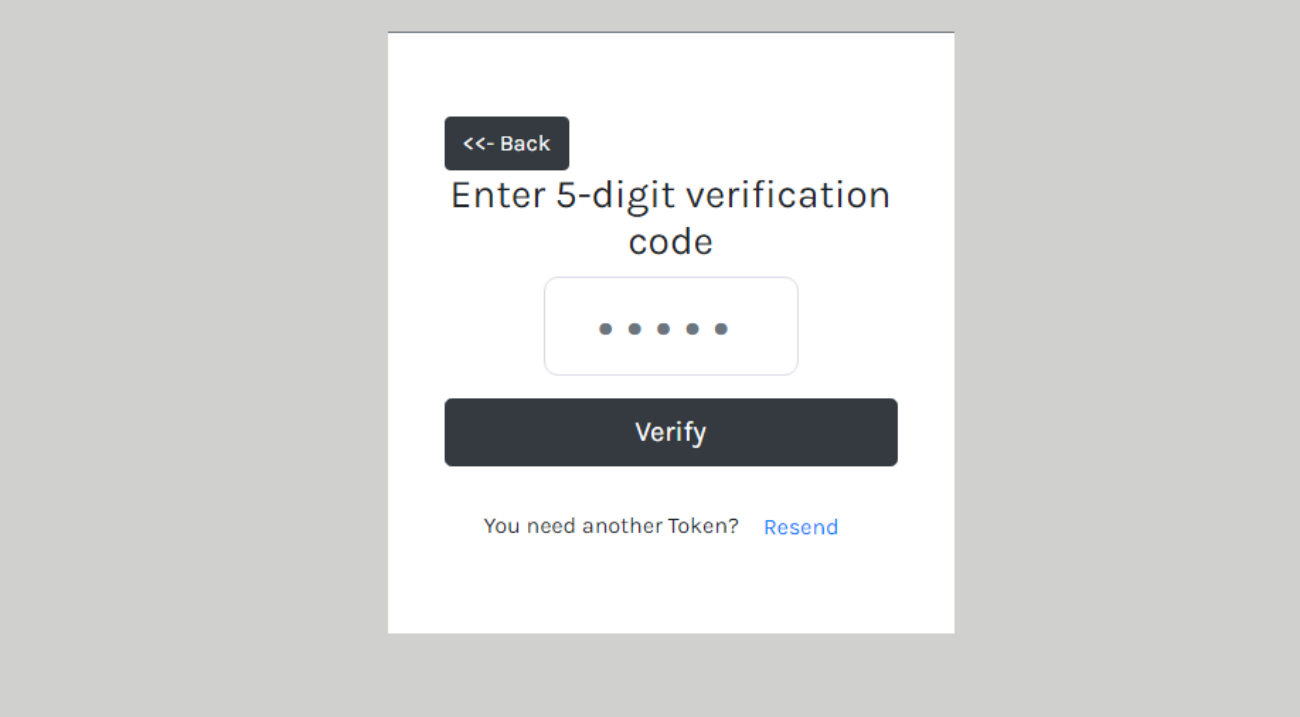
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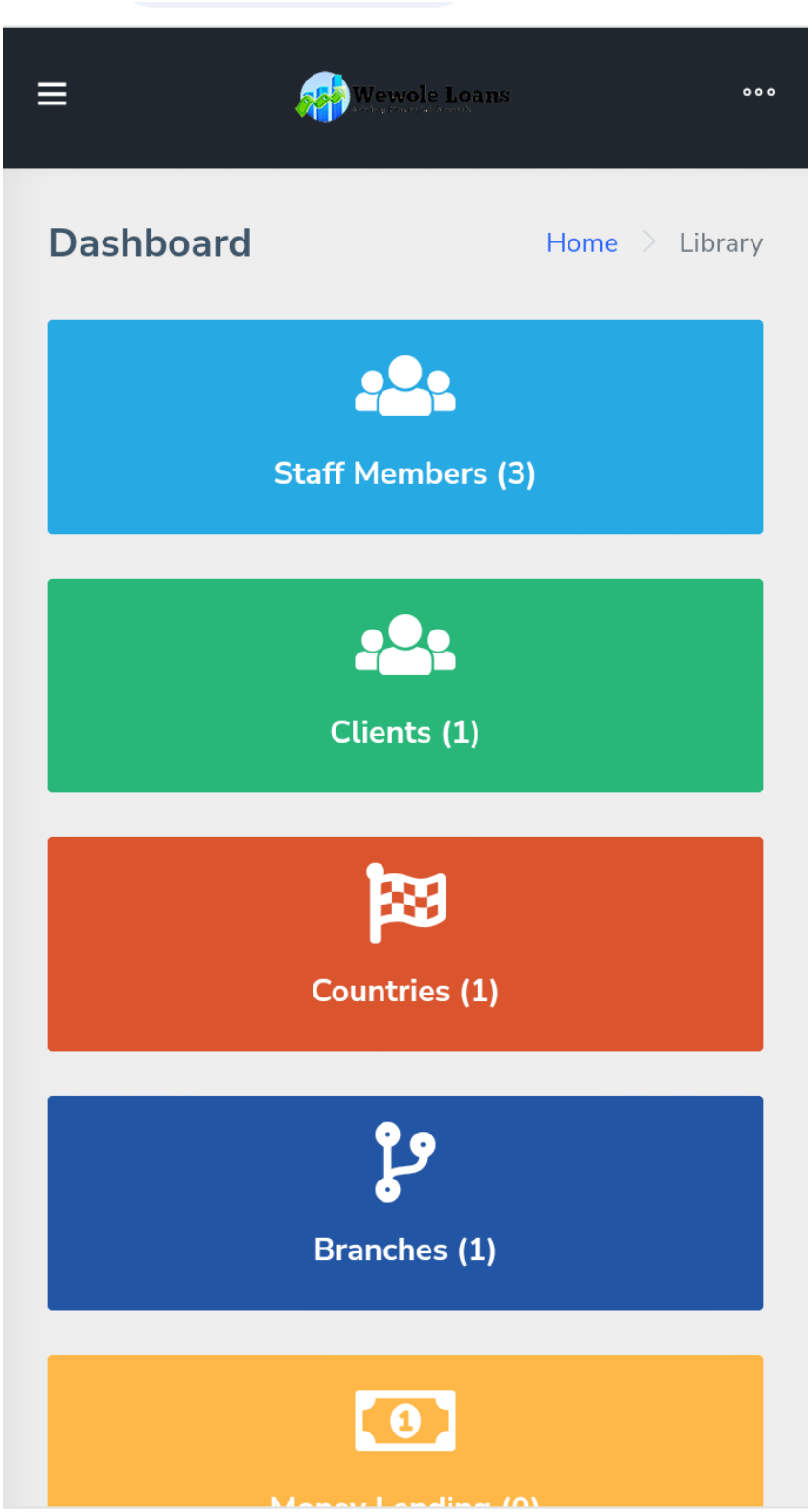
Verify
You need another Token?
Resend

Figure 6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Dashboard
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Library
Staff Members (3)
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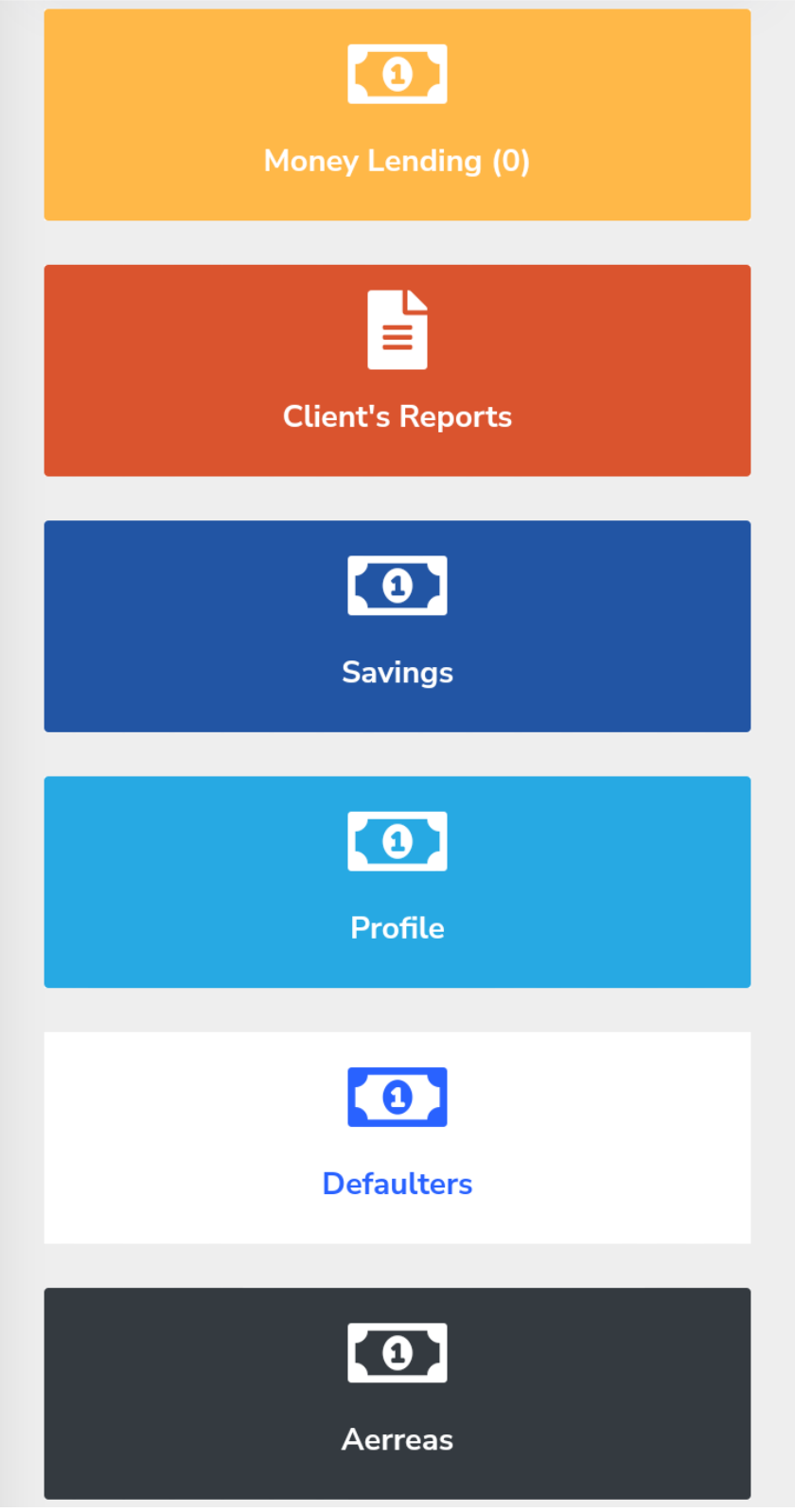
Branches (1)

Figure 7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Client's Reports
Savings
Profile
Defaulters
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Figure 8

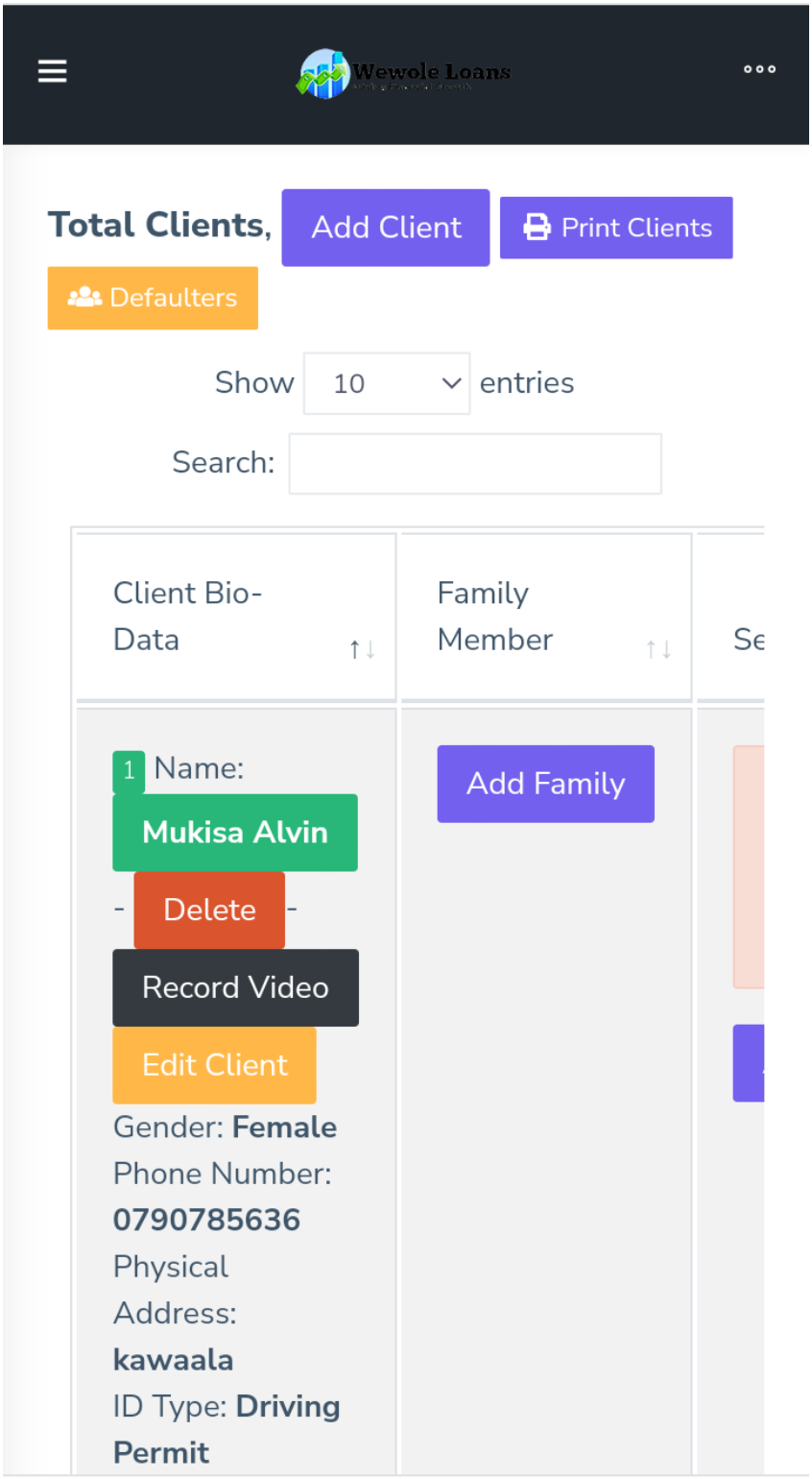
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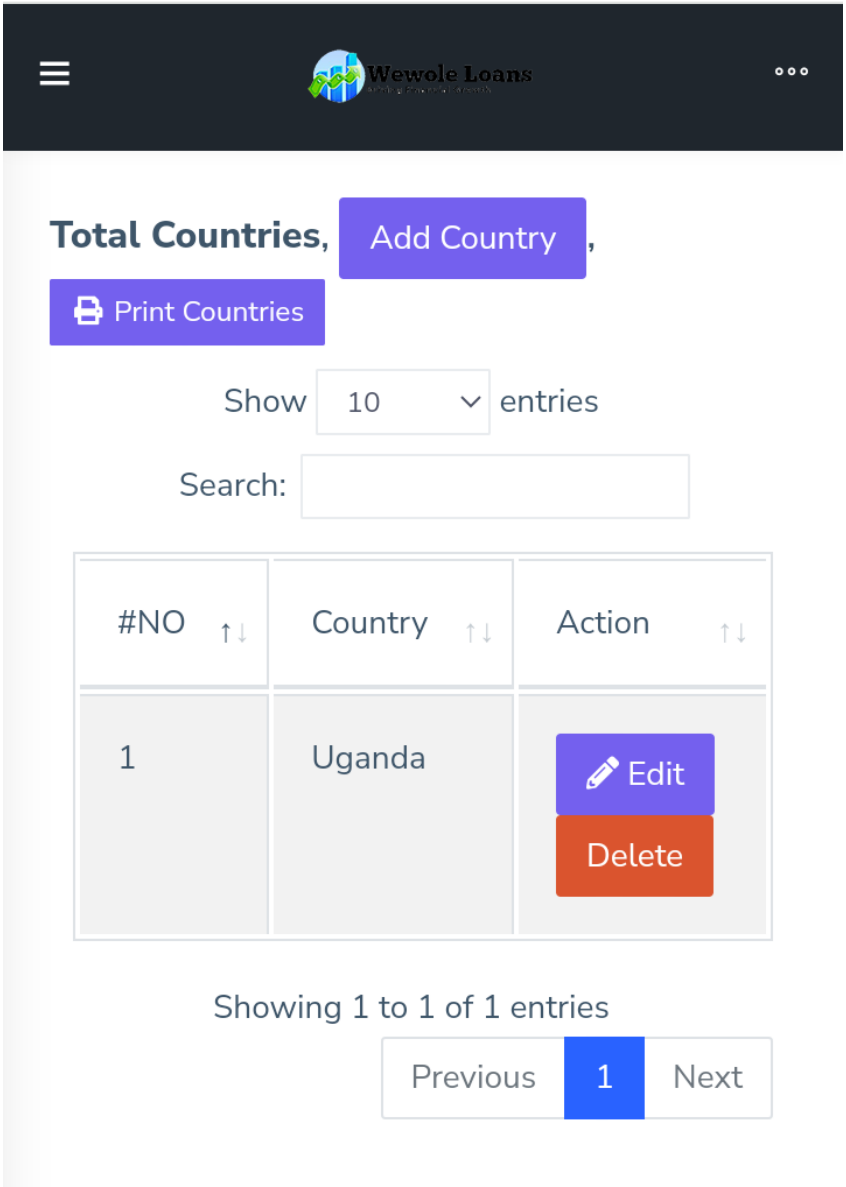
Figure 9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1
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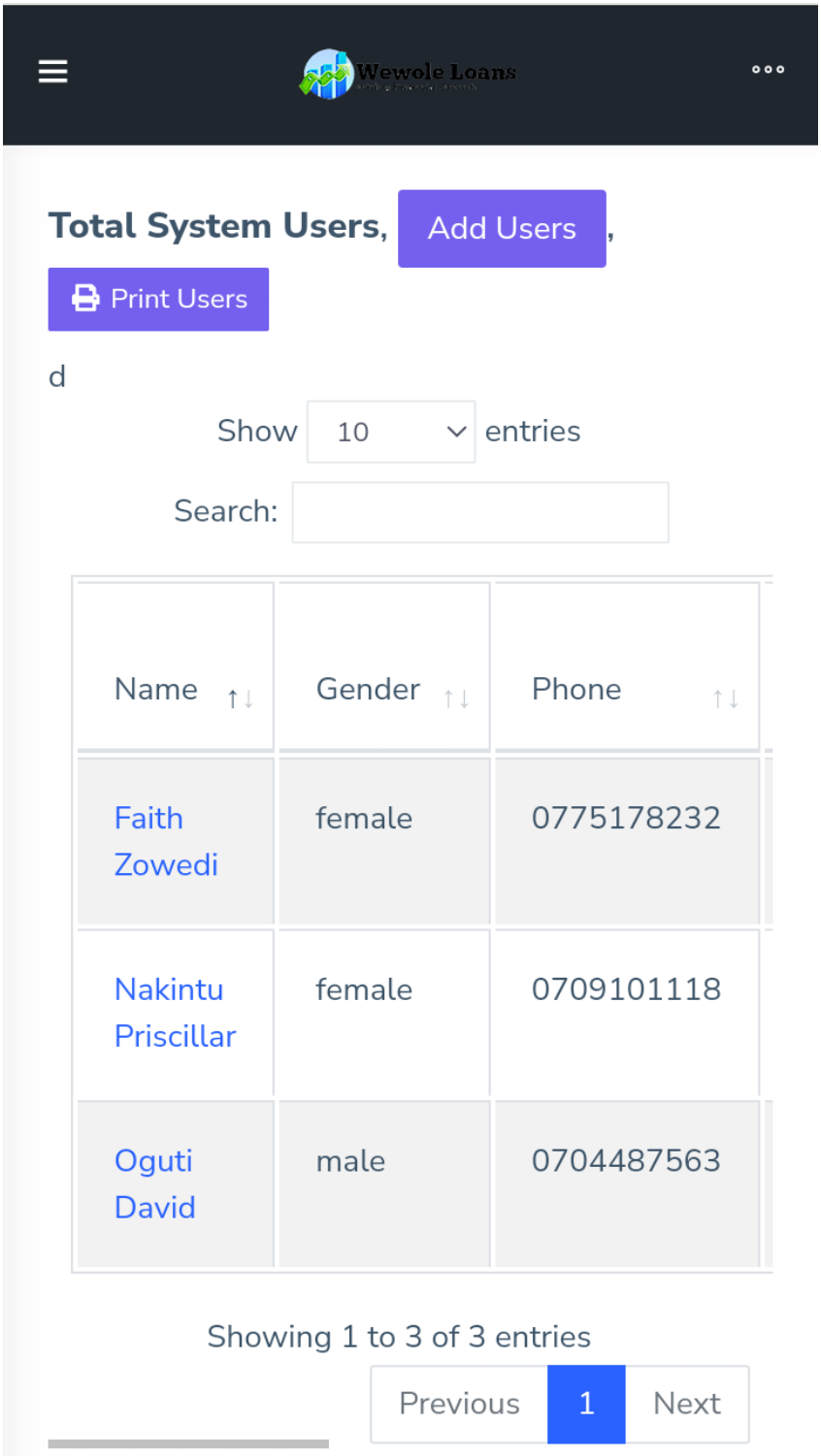
Figure 10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Oguti David
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1
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Figure 11

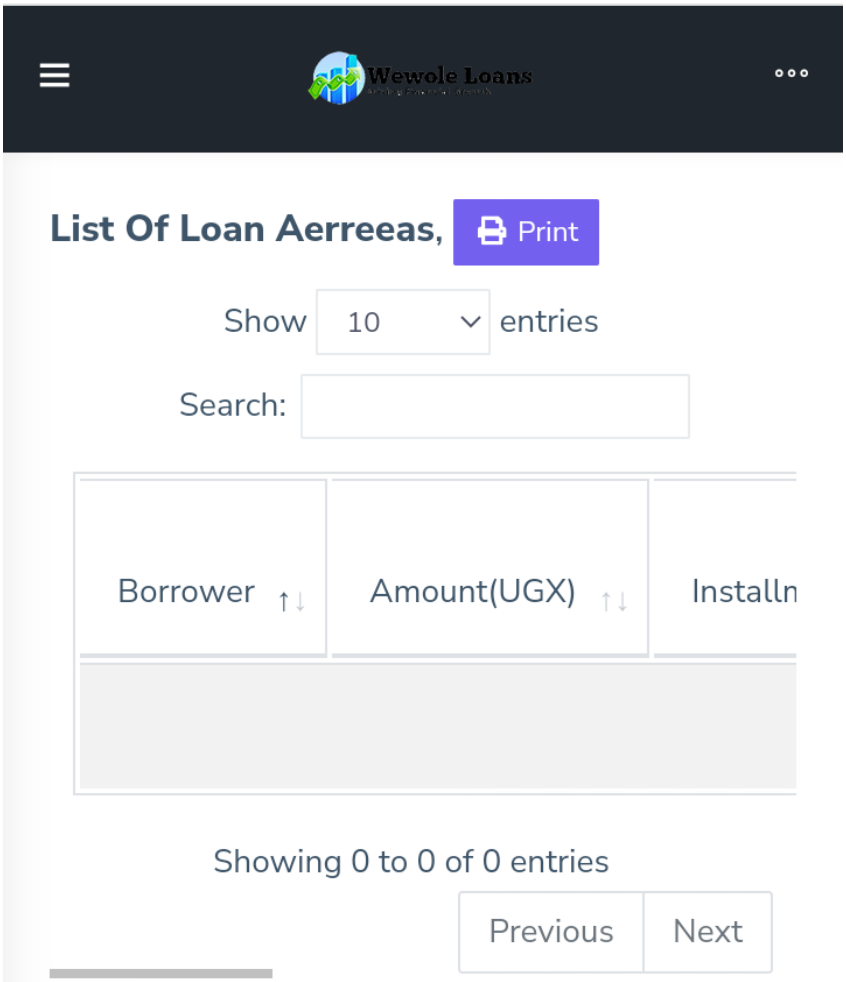
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Figure 12

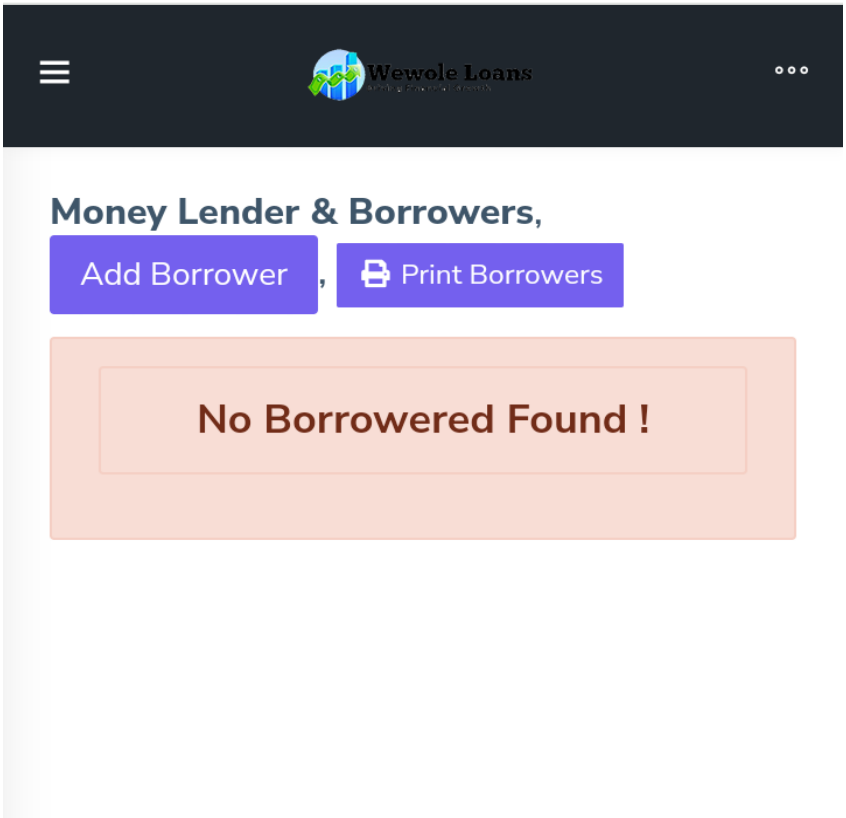

Wewole Loans
Money Lender & Borrowers,
Add Borrower
Print Borrowers
No Borrowered Found !

Figure 13

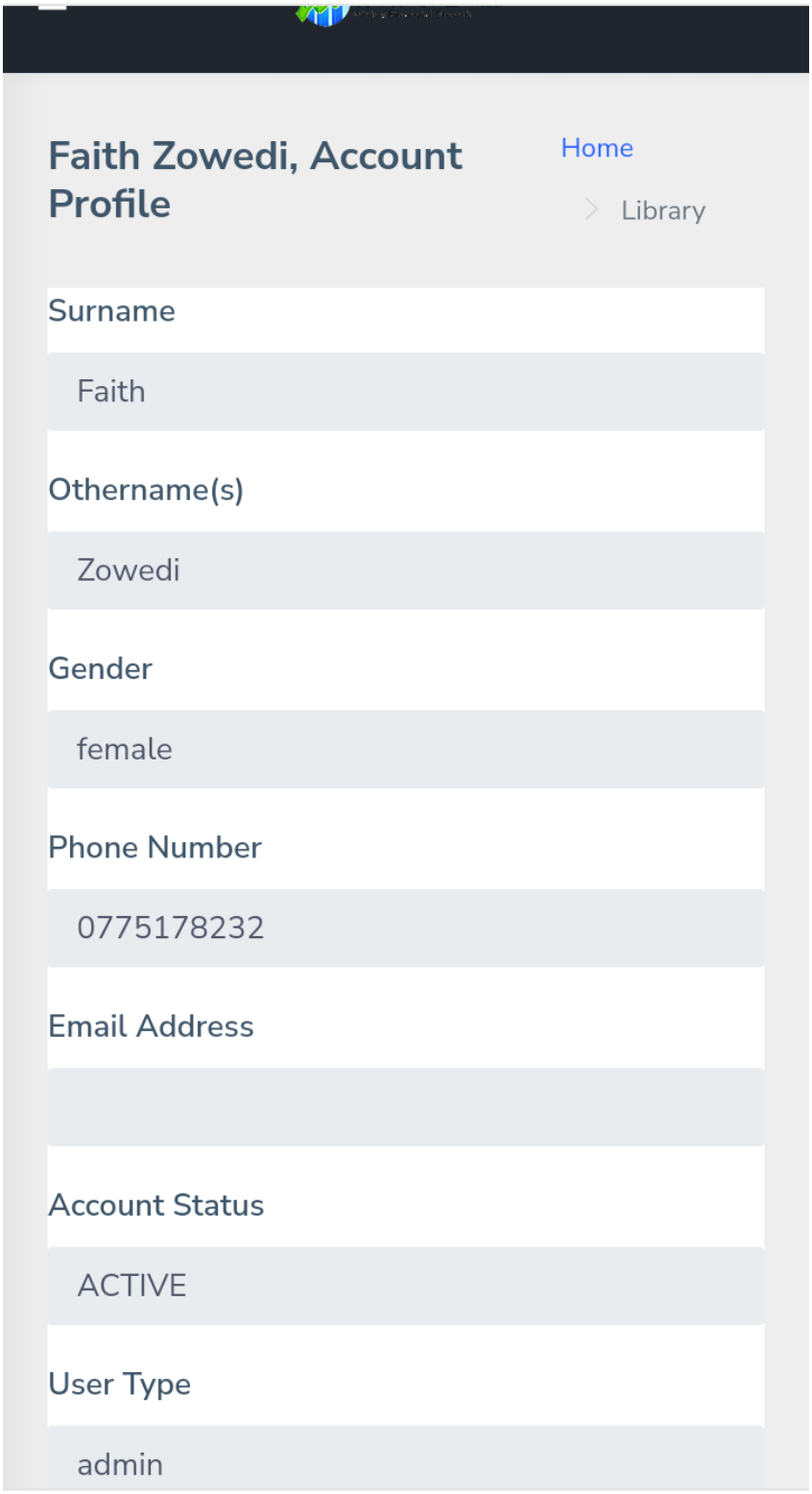
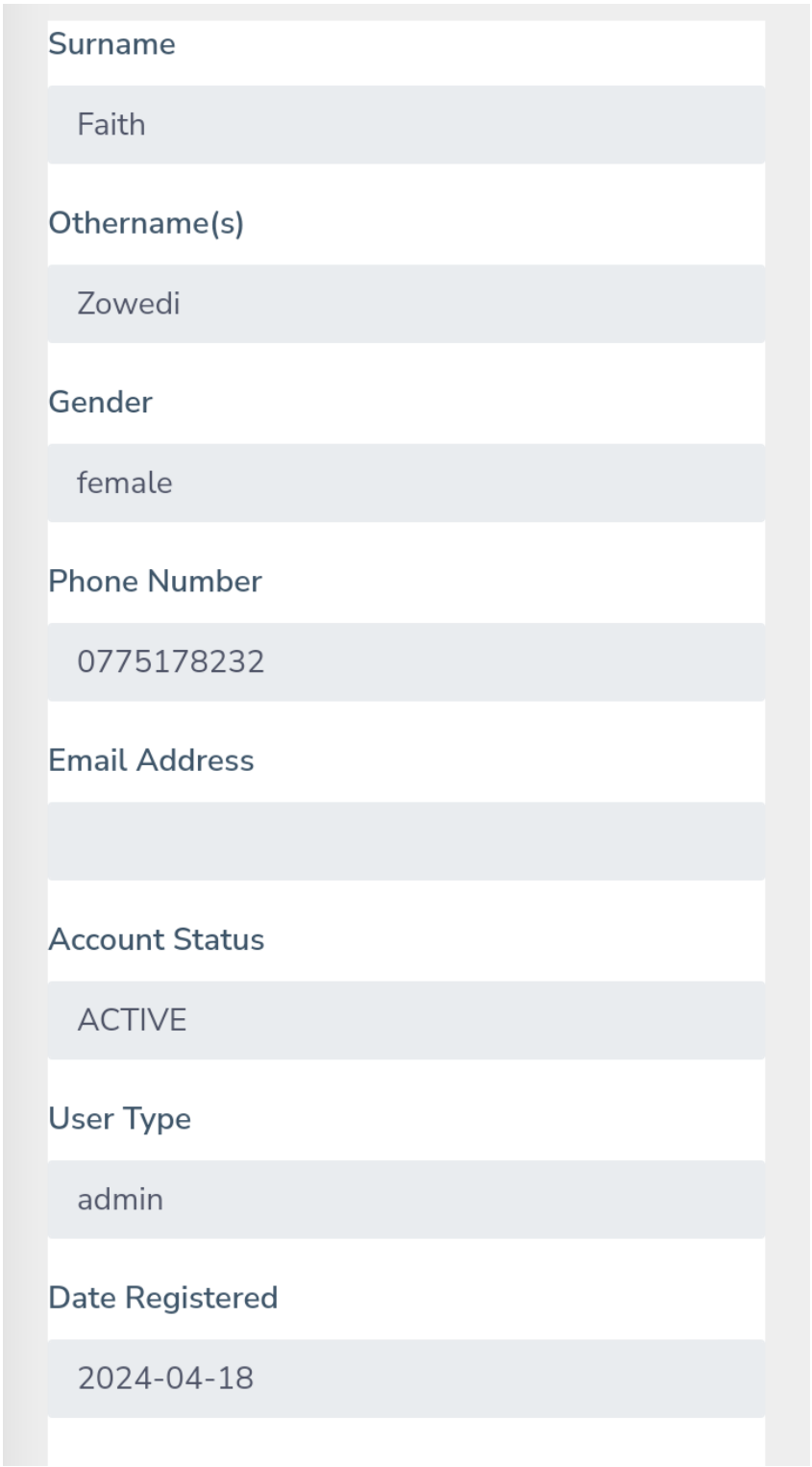

Faith Zowedi, Account Profile
Home
Library
Surname
Faith
Othername(s)
Zowedi
Gender
female
Phone Number
0775178232
Email Address
Account Status
ACTIVE
User Type
admin

Figure 14


Surname
Faith
Othername(s)
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Email Address
Account Status
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User Type
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Date Registered
2024-04-18

Figure 15

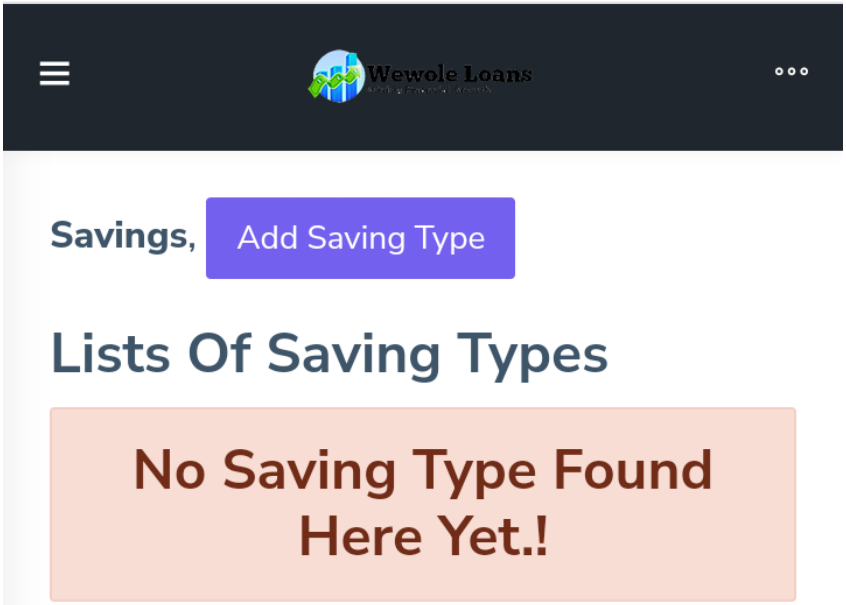


Figure 16

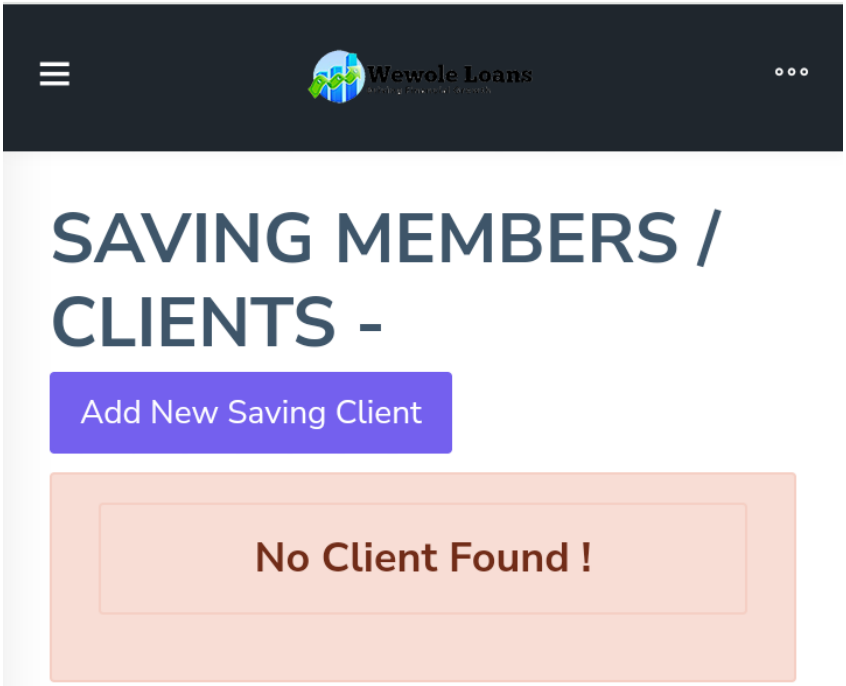


Figure 17

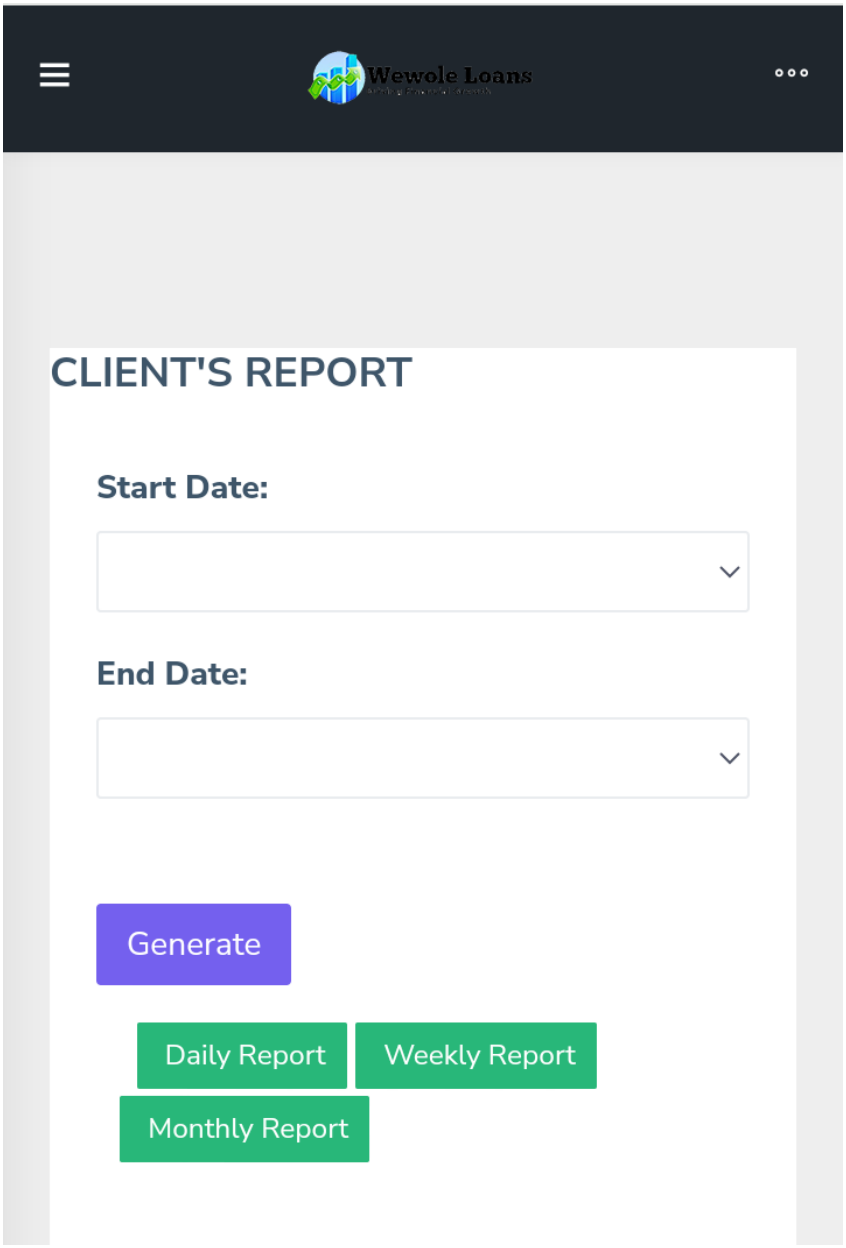

Wewole Loans
CLIENT'S REPORT
Start Date:
End Date:
Generate
Daily Report
Weekly Report
Monthly Report

Figure 18

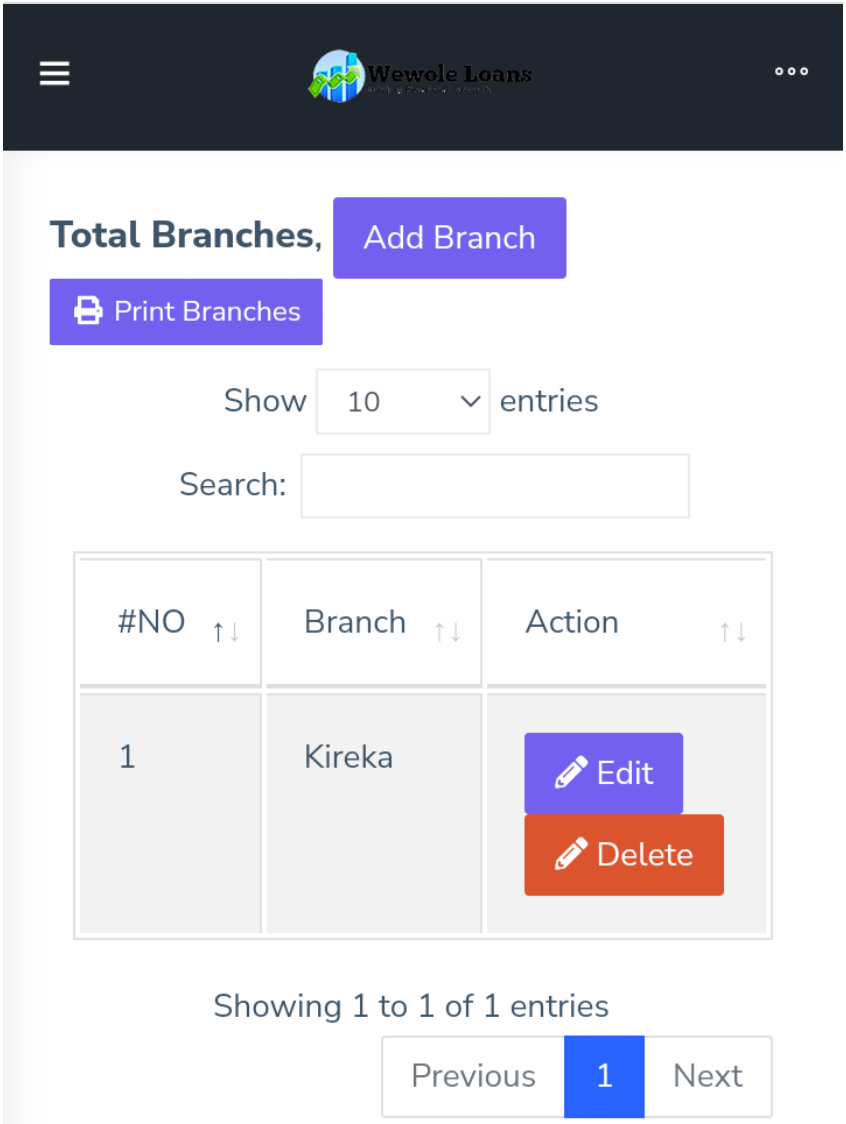

Wewole Loans
Total Branches,
Add Branch
Print Branches
Show 10 entries
Search:
#NO
Branch
Action
1
Kireka
Edit
Delete
Showing 1 to 1 of 1 entries
Previous
1
Next

Figure 19

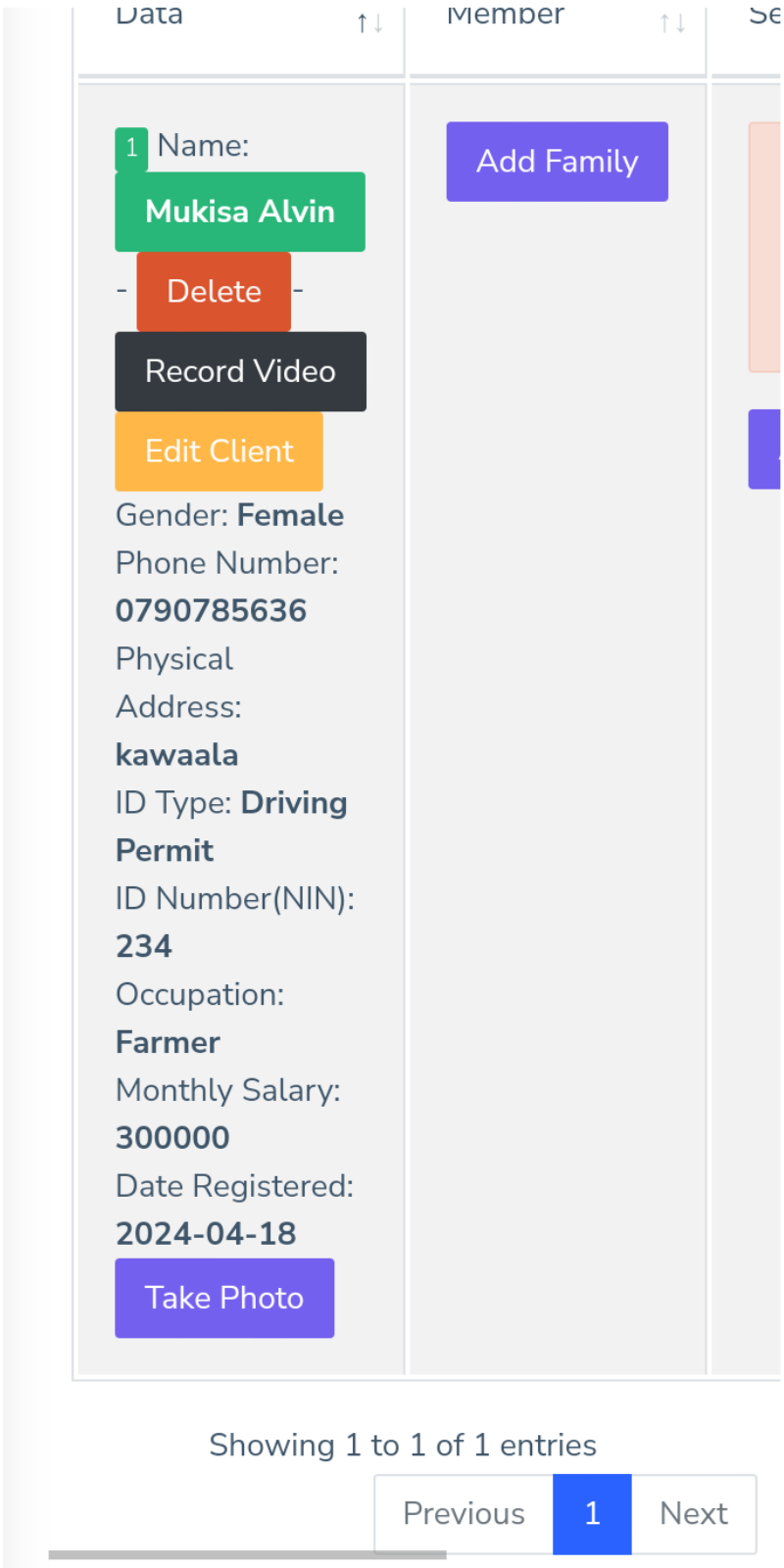

Data
Member
1 Name:
Mukisa Alvin
Add Family
- Delete -
Record Video
Edit Client
Gender: Female
Phone Number: 0790785636
Physical Address: kawaala
ID Type: Driving Permit
ID Number(NIN): 234
Occupation: Farmer
Monthly Salary: 300000
Date Registered: 2024-04-18
Take Photo
Showing 1 to 1 of 1 entries
Previous
1
Next

Figure 20

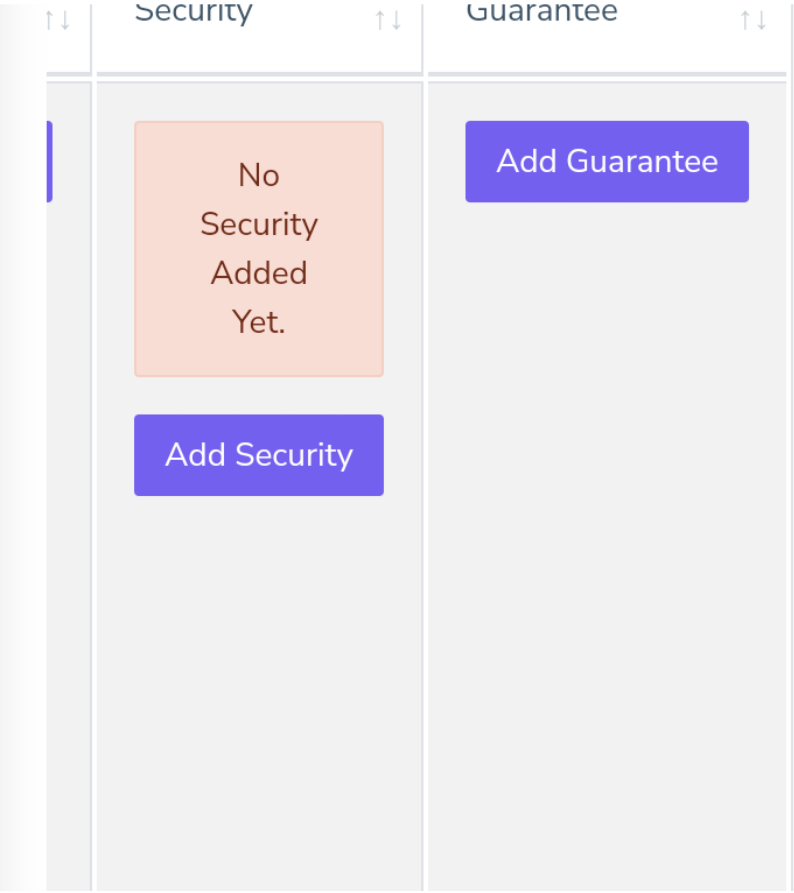
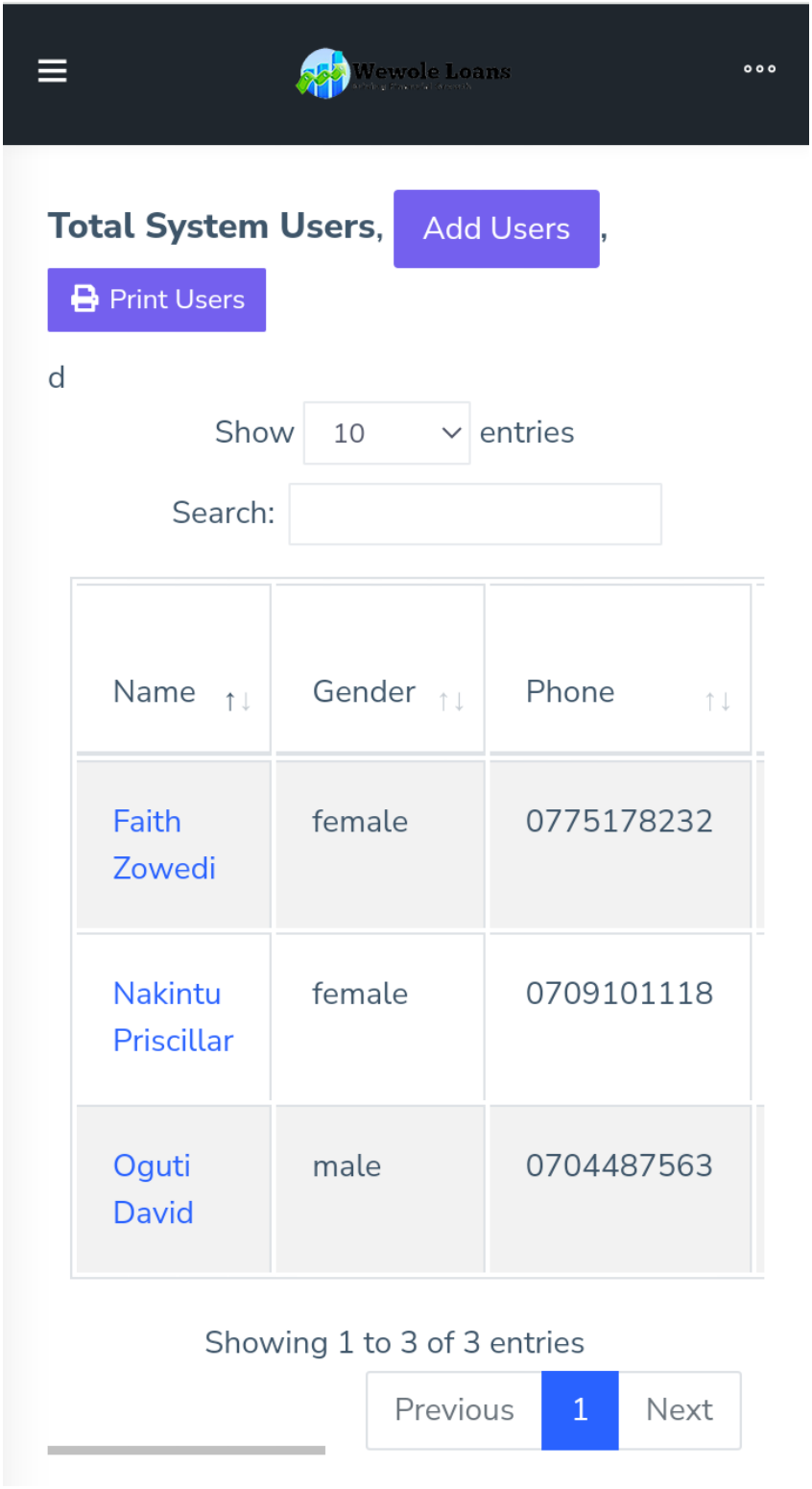

Security
Guarantee
No Security Added Yet.
Add Security
Add Guarantee

Figure 21


Wewole Loans
Total System Users,
Add Users
Print Users
d
Show 10 entries
Search:
Name
Gender
Phone
Faith Zowedi
female
0775178232
Nakintu Priscillar
female
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Oguti David
male
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Showing 1 to 3 of 3 entries
Previous
1
Next

Figure 22

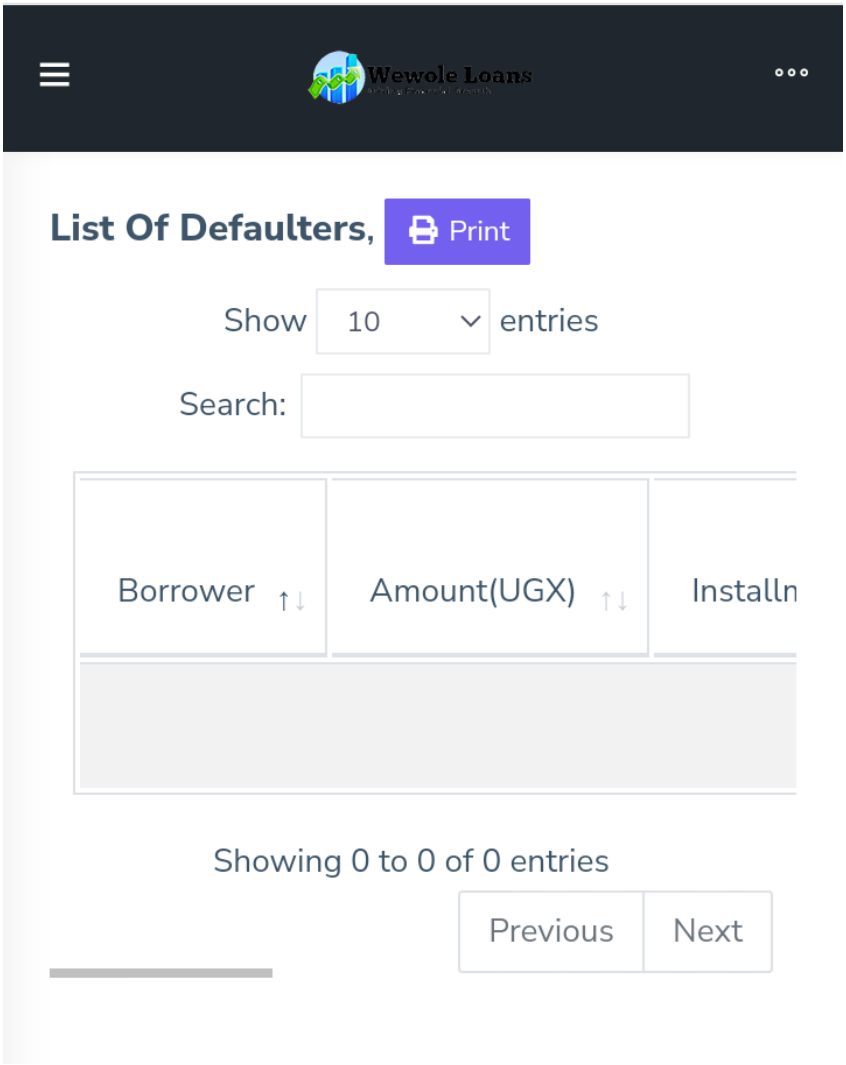

Figure 23

2.6. System Validation and Verification

System validation and verification were intended to show that the system conforms to its specifications and meets the requirements of the system users. It involved checking and reviewing processes for proper and secure system performance.

2.7. 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.

2.8. System implementation

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

CHAPTER THREE

PRESENTATION AND DISCUSSION OF THE RESULTS.

3.0. Introduction

This chapter presents the presentation and discussion of the results which includes a description of the technology, specifications, implementation, and testing and, lastly the requirements for example the user requirements, and functional and non-functional requirements of a SACCO loan management system.

3.1. Description of the technology.

A Sacco Loan Management System is a technology solution designed to facilitate and streamline the loan management processes within a Savings and Credit Cooperative (Sacco) organization. It is a comprehensive software system that automates various loan-related tasks, enhances operational efficiency, and improves member experience.

The designed technology of a Sacco Loan Management System typically encompasses the following key components and features:

Member Management: The system provides a centralized database to manage member information, including personal details, account history, and loan eligibility. It allows for easy member registration, updates, and tracking of member activities.

Loan Application and Approval: The system offers an intuitive interface for members to apply for loans electronically. It automates the loan approval process, allowing loan officers to review and analyze applications efficiently. The system may include credit scoring algorithms or decision-making tools to assess loan eligibility and risk.

Loan Portfolio Management: The system enables comprehensive management of the loan portfolio. It tracks loan disbursements, repayments, and interest accruals, and calculates outstanding balances. It provides real-time visibility into Sacco's loan portfolio performance, including delinquency rates, default rates, and portfolio growth.

Interest Calculation and Billing: The system automates interest calculations based on predefined interest rates and loan terms. It generates accurate loan repayment schedules and enables automated billing and reminders for members. It may also handle complex interest calculation methods, such as reducing balance or flat interest rates.

Collateral Management: If applicable, the system allows for the management of collateral information associated with loans. It tracks collateral details, valuation, documentation, and releases based on loan repayment status.

Loan Repayment and Collection: The system offers functionalities to record and process loan repayments from members. It tracks payment history, generates receipts, and automates the

collection process through various channels, such as cash, checks, electronic transfers, or mobile payments.

Reporting and Analytics: The system provides comprehensive reporting capabilities, generating various loan-related reports, such as loan disbursement reports, portfolio analysis, delinquency reports, and financial statements. It may also include data visualization tools and customizable dashboards for real-time monitoring and analysis.

Integration and Interoperability: The designed technology ensures seamless integration with other Sacco systems, such as core banking, accounting, or reporting systems. It allows data exchange and synchronization to maintain accurate and consistent information across different systems.

Data Security and Compliance: The system incorporates robust security measures, including user access controls, encryption protocols, and data backups, to protect member data and ensure compliance with data protection regulations. It may also provide audit trails and logs for monitoring and compliance purposes.

Scalability and Flexibility: The technology is designed to support the growth and evolving needs of Sacco. It offers scalability to handle increasing loan volumes and flexible configurations to accommodate Sacco-specific requirements, workflows, and loan products.

3.2. Specifications.

The specifications of a Sacco Loan Management System can vary depending on the specific requirements and functionalities of the system. However, here are some common specifications that are typically included in such a system:

User Interface (UI): The system should provide a user-friendly interface with intuitive navigation and responsive design. It should be easy to use for loan officers, administrators, and members, allowing them to perform tasks efficiently and access information seamlessly.

Member Management: The system should have a member database that captures and stores member information, including personal details, contact information, account history, and loan eligibility. It should support member registration, profile updates, and member search functionalities.

Loan Application and Approval: The system should enable members to submit loan applications electronically through a user-friendly interface. It should support customized loan application forms, document uploads, and automated workflows for loan approval. Loan officers should be able to review, analyze, and approve loan applications based on predefined criteria and risk assessment tools.

Loan Portfolio Management: The system should provide comprehensive loan portfolio management capabilities. It should track loan disbursements, repayments, and interest accruals, and generate accurate loan repayment schedules. It should allow loan officers to monitor the status of loans, view outstanding balances, and analyze the performance of the loan portfolio.

Interest Calculation and Billing: The system should support flexible interest calculation methods based on predefined interest rates and loan terms. It should accurately calculate interest accruals, generate repayment schedules, and automate billing processes. It should also handle various

payment frequencies (monthly, quarterly, etc.) and payment methods (cash, check, electronic transfers, etc.).

Collateral Management: If collateral is involved in loan processing, the system should provide functionality to manage collateral information. It should capture collateral details, valuation, and documentation. It should also track collateral releases upon loan repayment or default.

Loan Repayment and Collection: The system should enable loan officers to record loan repayments from members accurately. It should support multiple payment channels, such as cash, checks, electronic transfers, or mobile payments. It should generate payment receipts, track payment history, and automate collection processes, including reminders and notifications.

Reporting and Analytics: The system should offer robust reporting and analytics capabilities. It should generate various loan-related reports, including loan disbursement reports, portfolio analyses, delinquency reports, and financial statements. It should also provide data visualization tools and customizable dashboards for real-time monitoring and analysis.

Integration and Interoperability: The system should have the ability to integrate with other Sacco systems, such as core banking, accounting, or reporting systems. It should allow data exchange and synchronization to maintain data consistency across different systems.

Security and Compliance: The system should incorporate strong security measures to protect member data and ensure compliance with data protection regulations. It should have user access controls, encryption protocols, data backups, and audit trail capabilities to ensure data security and accountability.

Scalability and Customization: The system should be scalable to accommodate Sacco's growing loan volumes and evolving requirements. It should also support customization to align with Sacco's specific workflows, loan products, and policies.

3.3. Implementation and testing.

The implementation and testing of a Sacco Loan Management System involve several stages and activities to ensure a successful deployment of the system. Here's a general overview of the implementation and testing process:

Requirements Gathering: The first step is to gather and document the specific requirements of Sacco, including functional requirements (e.g., loan application process, repayment calculations) and non-functional requirements (e.g., system performance, and security measures). This phase involves discussions with key stakeholders and subject matter experts to understand Sacco's needs.

System Design: Based on the gathered requirements, the system design phase involves creating a detailed design of the Sacco Loan Management System. This includes designing the database structure, user interface, workflows, and integration points with other systems. The system design should align with Sacco's processes and workflows.

System Development: In this phase, the actual development of the Sacco Loan Management System takes place. It involves coding the software components, configuring the database, designing user interfaces, and implementing the required functionalities. Development follows best practices and coding standards to ensure the system's reliability and maintainability.

System Integration: Once the core system components are developed, integration with other systems, such as core banking systems or reporting systems, is performed. This phase involves establishing data exchange mechanisms, ensuring interoperability, and conducting thorough testing to verify the seamless integration of the Sacco Loan Management System with other systems in Sacco's technology ecosystem.

Testing: The testing phase is crucial to validate the functionality, performance, and reliability of the Sacco Loan Management System. Testing includes various types, such as:

i. Unit Testing: Developers test individual software components to ensure they function correctly.
ii. Integration Testing: The integrated system is tested to verify that different components work together as expected.

iii. Functional Testing: The system is tested against the functional requirements to ensure it meets the desired functionalities.

iv. Performance Testing: The system's performance is tested under different load conditions to ensure it can handle expected transaction volumes.

v. Security Testing: The system is tested for vulnerabilities to ensure the security of member data and protection against potential threats.

vi. User Acceptance Testing (UAT): The system is tested by end-users to validate its usability, functionality, and alignment with Sacco's requirements.

Deployment: Once the system has passed all testing stages and has been approved by stakeholders, it is deployed to the live production environment. This involves installing the system on the appropriate servers, configuring necessary settings, migrating data, and ensuring proper connectivity with other systems.

Training and User Adoption: System training sessions are conducted to familiarize Sacco staff with the Sacco Loan Management System. Users receive training on how to navigate the system, perform tasks, and leverage its features effectively. Training materials and documentation are provided to support users during the transition.

Post-Implementation Support: After the system is deployed, ongoing support and maintenance are essential. This includes addressing any issues or bugs that arise, providing timely software updates and security patches, and offering technical assistance to users as needed. Continuous monitoring and optimization of the system may also be performed to enhance its performance and address evolving requirements.

3.4. Requirements

3.4.1. User Requirements.

User requirements focus on the needs and expectations of the system's end-users, such as loan officers, administrators, and Sacco members. These requirements typically include:

User Interface: The system should have a user-friendly interface with intuitive navigation, clear instructions, and easy-to-use features.

Member Management: The system should allow members to register, update their profiles, and view their loan and account information.

Loan Application: Members should be able to submit loan applications electronically, provide necessary documentation, and track the status of their applications.

Loan Approval: Loan officers should have the ability to review and evaluate loan applications, make informed decisions, and communicate loan approval or rejection to members.

Loan Repayment: Members should be able to make loan repayments conveniently using various payment methods and access information about their repayment history.

Reporting: Loan officers and administrators should have access to various reports, including loan portfolio analysis, delinquency reports, and financial statements.

Security and Privacy: The system should ensure the security and privacy of member information, with features like secure login, data encryption, and access controls.

3.4.2. Functional Requirements.

Functional requirements define the specific functions and features that the Sacco Loan Management System should provide. These requirements typically include:

Member Registration and Management: The system should allow for member registration, capturing necessary personal and contact information, and maintaining an updated member database.

Loan Application Processing: The system should support the submission, processing, and tracking of loan applications, including document uploads, eligibility checks, and automated workflows for approval.

Loan Disbursement and Repayment: The system should facilitate loan disbursements, repayment tracking, and interest calculations. It should generate accurate repayment schedules and handle different payment frequencies and methods.

Loan Portfolio Management: The system should enable loan officers to monitor and manage the loan portfolio, including tracking loan statuses, generating reports, and analyzing loan performance.

Collateral Management: If collateral is involved, the system should have functionalities to capture collateral details, valuation, and release processes.

Reporting and Analytics: The system should generate various reports and provide data analytics capabilities to help loan officers and administrators make informed decisions.

Integration: The system should integrate with other Sacco systems, such as core banking systems or reporting systems, to ensure data consistency and streamline processes.

3.4.3. Non-Functional Requirements:

Non-functional requirements define the qualities and characteristics of the system, beyond its specific functionalities. These requirements typically include:

Performance: The system should be able to handle a high volume of transactions efficiently and respond quickly to user requests.

Reliability: The system should be reliable and available, with minimal downtime and the ability to recover from failures.

Security: The system should have robust security measures in place to protect member data, prevent unauthorized access, and comply with data protection regulations.

Scalability: The system should be scalable to accommodate growing loan volumes and expanding membership.

Usability: The system should be intuitive and easy to use, with clear instructions and minimal training requirements for users.
Compatibility: The system should be compatible with various devices, browsers, and operating systems commonly used by Sacco members and staff.

Maintainability: The system should be designed for ease of maintenance, with clear documentation, modular architecture, and efficient code structure.

CHAPTER FOUR

4.0. Introduction.

This chapter marks the end of the report and presents the evaluations, limitations, problems encountered recommendations, and the conclusion of the SACCO loan management system.

4.1. Evaluations

Evaluations of a Sacco Loan Management System typically involve assessing its effectiveness, efficiency, and impact on Sacco's operations and member experience. The evaluations can be carried out through various methods and considerations. Here are some key aspects to consider when evaluating a Sacco Loan Management System:

System Performance: Evaluate the system's performance by measuring its responsiveness, reliability, and scalability. Assess the system's ability to handle concurrent loan applications, process loan requests within expected time-frames, and provide real-time updates on loan statuses. Determine if the system meets the performance requirements defined during the design phase.

User Experience: Evaluate the user experience of the loan management system from both the Sacco staff and member perspectives. Consider factors such as ease of use, intuitiveness of the user interface, clarity of instructions, and accessibility of information. Conduct user surveys, perform usability tests, or gather feedback from system users to assess their satisfaction and identify areas for improvement.

Efficiency and Productivity: Assess the system's impact on the efficiency and productivity of loan management processes. Measure the reduction in manual tasks, turnaround time for loan processing, and the accuracy of calculations and data management. Compare the system's performance to the previous manual or legacy processes to determine the improvements achieved.

Risk Management and Compliance: Evaluate the system's effectiveness in managing risks associated with loan processing and ensuring compliance with regulatory requirements. Assess the system's ability to perform creditworthiness assessments, detect fraud or suspicious activities, and generate accurate reports for regulatory compliance. Consider any incidents or issues that occurred and evaluate the system's response and mitigation measures.

Data Accuracy and Security: Assess the accuracy, integrity, and security of data stored and processed within the loan management system. Evaluate the system's data validation mechanisms, backup and recovery processes, and access controls to ensure the confidentiality and privacy of member information. Conduct security audits and penetration testing to identify vulnerabilities and ensure data protection.

Financial Impact: Evaluate the financial impact of the loan management system on Sacco's operations. Measure the system's contribution to increased loan disbursements, improved repayment rates, reduced delinquencies, or decreased operational costs. Analyze financial indicators such as loan portfolio growth, interest income, and provision for bad debts to assess the system's influence on Sacco's financial health.

Member Satisfaction: Assess member satisfaction with the loan management system by gathering feedback through surveys, interviews, or focus groups. Evaluate members' perception of the system's convenience, transparency, responsiveness, and overall experience. Identify any pain points or areas for improvement to enhance member satisfaction and loyalty.

Continuous Improvement: Identify opportunities for continuous improvement of the loan management system. Consider feedback from stakeholders, system users, and industry best practices to identify areas for enhancement. Establish a feedback loop to incorporate suggestions, address system limitations, and implement updates or upgrades to continually optimize the system's functionality and performance.

4.2. Limitations.

While a Sacco Loan Management System offers numerous advantages, it is important to recognize its limitations. Here are some common limitations that may arise with the technology used in a Sacco Loan Management System:

Technical Infrastructure: The performance and capabilities of the system can be limited by the underlying technical infrastructure. Factors such as server capacity, network connectivity, and hardware resources can impact the system's responsiveness and scalability. Inadequate infrastructure may result in system slowdowns, downtime, or limitations on the number of concurrent users or transactions.

Integration Challenges: Integrating the loan management system with existing Sacco systems, such as core banking or accounting systems, can be complex. Incompatibilities between different technologies, databases, or data formats may hinder seamless data flow and process automation. Integration challenges can result in data inconsistencies, manual workarounds, or delays in information updates.

Customization and Flexibility: Off-the-shelf loan management systems may have limitations when it comes to customization and flexibility. The system may not fully align with the unique workflows, policies, or processes of the Sacco, requiring workarounds or compromises. Limited

customization options can restrict Sacco's ability to tailor the system to its specific needs and may require manual interventions or additional software development.

Data Security and Privacy: Loan management systems deal with sensitive member data, making data security and privacy crucial. However, vulnerabilities in the system's architecture, inadequate encryption mechanisms, or human errors can expose data to unauthorized access or breaches. Compliance with data protection regulations, such as GDPR or local privacy laws, is essential but may pose challenges in implementation and ongoing maintenance.

User Adoption and Training: Introducing a new loan management system requires user adoption and training. Resistance to change, lack of familiarity with the system, or insufficient training can hinder the system's successful implementation. Users may struggle to navigate the interface, perform tasks efficiently, or utilize the system's features optimally, leading to reduced productivity or errors.

Maintenance and Support: Ongoing system maintenance and support are essential for the smooth operation of a loan management system. However, limitations in technical expertise or inadequate support resources can impact the system's reliability and responsiveness. Timely bug fixes, updates, and user support may be challenging to provide, leading to system downtime or delays in issue resolution.

Cost Considerations: Implementing and maintaining a loan management system involves costs, including software licenses, infrastructure upgrades, customization, training, and ongoing support. Limited budgetary resources may restrict the scope or capabilities of the system, affecting its overall effectiveness. Balancing the cost-effectiveness of the system with its functionality and benefits can be a challenge.

4.3. Problems encountered.

Implementing a Sacco Loan Management System can present several challenges and problems. Here are some common issues that organizations may encounter during the implementation and operation of such a system:

Data Migration and Integration: One of the primary challenges is migrating and integrating existing data from legacy systems or manual records into the new loan management system. Inaccurate or incomplete data, data format inconsistencies, or data mapping issues can hinder a smooth transition. Resolving these challenges requires careful data cleansing, mapping, and validation processes.

System Customization: Loan management systems may not always perfectly align with the unique processes and requirements of a Sacco. Customizing the system to meet specific needs can be complex and time-consuming. Balancing customization with the system's core functionality and upgrade compatibility is crucial to avoid excessive complexity or difficulties during future system updates.

User Adoption and Training: Introducing a new loan management system requires user adoption and training. Resistance to change, lack of familiarity with the system, or inadequate training can impede successful implementation. Users may struggle to adapt to the new system, leading to reduced efficiency, errors, or reliance on manual workarounds. Providing comprehensive training and ongoing support is essential to ensure user proficiency and system acceptance.

System Performance and Scalability: As the number of loan applications and members increases, the system's performance and scalability may be challenged. Slow response times, system crashes, or limitations on concurrent users can impact operations. Ensuring that the system's infrastructure, architecture, and database configurations are properly designed and optimized is crucial to maintain optimal performance.

Data Security and Compliance: Protecting member data and ensuring regulatory compliance are critical considerations. A loan management system must adhere to data protection and privacy regulations, such as GDPR or local financial regulations. Building robust security measures, encryption protocols, access controls, and audit trails within the system is necessary to mitigate the risk of data breaches or non-compliance.

System Integration and Interoperability: Saccos often have multiple systems that need to interface with the loan management system, such as core banking, accounting, or reporting systems. Achieving seamless integration and interoperability between these systems can be challenging due to differences in data formats, APIs, or technological constraints. Developing effective integration strategies and ensuring data consistency across systems is crucial.

Ongoing Maintenance and Support: A loan management system requires regular maintenance, updates, and user support. Limited resources, including technical expertise or support personnel, can hinder timely bug fixes, system enhancements, or issue resolution. Establishing effective maintenance processes, vendor support agreements, and user feedback channels is essential to address system issues promptly.

Change Management: Implementing a new loan management system often involves significant organizational changes. Resistance from staff, difficulties in adapting to new processes, or inadequate change management strategies can impede successful implementation. A comprehensive change management plan, including stakeholder engagement, communication, and training, is crucial to foster a smooth transition.

4.4. Recommendations:

Conduct a thorough needs assessment: Before implementing a loan management system, conduct a comprehensive needs assessment to identify specific requirements, pain points, and goals. This assessment will help in selecting a system that aligns with Sacco's loan unique needs and objectives.

Choose a scalable and flexible system: Select a loan management system that can accommodate future growth and changing requirements. Ensure that the system is scalable, easily customizable, and can integrate with other Sacco systems to support seamless operations.

Prioritize user training and support: Invest in comprehensive user training programs to ensure staff members are proficient in using the loan management system. Provide ongoing support channels and resources to address user inquiries, resolve issues, and gather feedback for system enhancements.

Ensure data security and compliance: Implement robust security measures within the loan management system to protect member data. Regularly review and update security protocols to address emerging threats. Comply with relevant data protection and financial regulations to maintain trust and legal compliance.

Foster user adoption and change management: Develop a change management strategy that focuses on effectively communicating the benefits of the loan management system, addressing user concerns, and promoting user adoption. Engage stakeholders, provide clear guidance, and monitor progress to ensure a smooth transition.

Regularly evaluate system performance: Continuously monitor the loan management system's performance, including responsiveness, data accuracy, and system uptime. Conduct periodic evaluations to identify areas for improvement and optimization. Collect user feedback to gauge satisfaction levels and identify potential enhancements.

Foster collaboration with technology vendors: Establish a strong relationship with the loan management system vendor. Engage in regular communication, provide feedback, and collaborate on system updates and enhancements. This partnership will ensure ongoing support, timely bug fixes, and access to new features.

4.5. Conclusion:

A Sacco Loan Management System plays a vital role in streamlining loan processes, improving efficiency, and enhancing member experience. By implementing a robust and user-friendly system, Saccos can automate loan processing, reduce manual efforts, and ensure accurate data management.

However, successful implementation and operation of a loan management system require careful planning, user training, and ongoing support. It is crucial to address challenges such as data migration, customization, system performance, and user adoption to maximize the system's benefits.

With a well-implemented loan management system, Saccos can enhance their loan portfolio growth, improve risk management, and provide a seamless experience to their members. Regular evaluation, continuous improvement, and collaboration with technology vendors will help ensure the loan management system remains effective and aligned with Sacco's evolving needs.

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