

**AUTOMATION OF MICROFINANCE**

**SAVINGS AND LOAN SYSTEM**

**CASE STUDY: COUNTRY SIDE MICROFINANCE**

**BY**

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## DECLARATION

I **Oroma Josephat Oling**, do hereby declare to the best of my knowledge that this Report and all its content is truly and entirely my original work, and that, the same work has not been submitted to any other university or institute of higher learning for the award of any degree or any other award.

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### APPROVAL

This project report has been submitted for examination with our approval as the supervisors.

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## LIST OF ABBREVIATIONS

SACCOS .....	Savings and Credit Cooperative Organizations
MFI .....	Micro finance Institutions
MIS .....	Management Information System
IS .....	Information Systems
SDLC .....	Systems Development Life Cycle
RAM .....	Random Access Memory
RDBMS .....	Relational Database Management System
DBMS .....	Database Management System
SQL .....	Structured Query Language
DB .....	Database
IBM .....	International Business Machines
CPU .....	Central Processing Unit
ICT .....	Information and Communications Technology
VB .....	Visual Basic
GoU .....	Government of Uganda
NURP .....	Northern Uganda Reconstruction Program
SWARP .....	South Western Uganda Agricultural Rehabilitation Project
BoU .....	Bank of Uganda
RB .....	Regional Bureau
ROSCA .....	Rotating Saving and Credit Association
PAP .....	Poverty Alleviation Project
NGO .....	Non Governmental Organization
MFPEd .....	Ministry of Finance, Planning and Economic Development
TPS .....	Transaction Processing System
RAP .....	Rapid Application Development
OOP .....	Object Oriented Programming
SOA .....	Service Oriented Architecture
DRP .....	Disaster Recovery Plan
BCP .....	Business Continuity Planning

## LIST OF FIGURES

Figure 3.1: Rapid Application Development .....	22
Figure 4.1: Conceptual framework for the savings and credit system .....	31
Figure 4.2: Class diagram of the Savings and Credit System .....	32
Figure 4.3: showing the use case diagram of savings and credit system .....	34
Figure 4.4: showing the interaction between the actors of the savings and credit system....	36
Figure 4.5: showing the sequence of interaction during deposit transaction .....	37
Figure 4.6: Conceptual Design of Loan System .....	39
Figure 4.7: Showing the entities and their relationships .....	43
Figure 4.8 the network design of the .....	44
Figure 4.9: Screenshot of the login form.....	45
Figure 4.10: a representation of the splash screen .....	46
Figure 4.11: The progress bar after the login is successful.....	46
Figure 4.12: The clients' details form .....	47
Figure 1.13: Screenshot of the clients details in a grid .....	48

## TABLE OF CONTENTS

DECLARATION .....	ii
APPROVAL.....	iii
ACKNOWLEDGEMENT .....	iv
LIST OF ABBREVIATIONS .....	v
LIST OF FIGURES.....	vi
TABLE OF CONTENTS .....	vii
ABSTRACT .....	xi
CHAPTER ONE .....	1
INTRODUCTION.....	1
1.1 General Introduction .....	1
1.2 Background of the study .....	1
1.3 Problem Statement .....	2
1.4 Objectives.....	3
1.4.1 Specific Objectives.....	3
1.5 Significance of the research .....	3
1.6 Scope of the research.....	4
1.6.1 Technological Scope .....	4
1.6.2 Geographic Scope .....	4
CHAPTER TWO.....	5
LITERATURE REVIEW.....	5
2.0 Introduction .....	5
2.1 Information System .....	5
2.2 The Savings System .....	6
2.3 The Loan system .....	6
2.4 Loan Systems Available in the Market .....	7
2.4.1 Micro Financer Standard Edition, v. 2.0 .....	8
2.4.2 CommonCents 101 (A Micro-Finance & Banking Software) .....	9
2.5 Management Information System .....	10
2.5.1 Characteristics of Management Information Systems .....	12
2.5.2 Roles of MIS .....	13
2.6 Designing the Management Information System.....	13

4.2.2 User Requirements .....	28
4.5 Constraints.....	29
4.6 Conceptual Framework .....	30
4.7 Model Management Diagrams.....	31
4.7.1 Class Diagram- Relational .....	31
4.7.2 Use Case Diagram.....	34
4.8 System Design.....	38
4.9 Designing the prototype .....	38
4.10 Designing the Loan Subsystem.....	38
4.11 Designing the Accounts system .....	40
4.12 Physical Design .....	40
4.12.1 Input Design/Interface Design .....	40
4.12.2 Output Design .....	41
4.12.3 Processing Design .....	41
4.12.4 Database Design.....	41
4.12.5 Network Design.....	44
4.12.6 Controls and Security Design.....	45
4.13 Logical Design .....	49
CHAPTER FIVE.....	51
SYSTEM IMPLEMENTATION .....	51
5.1 Hardware acquisition.....	52
5.2 Software acquisition.....	52
5.3 User preparation .....	52
5.4 Choice of Programming Language .....	53
5.5 Workability of program.....	53
5.5.1 Program Components.....	53
5.6 Program Testing .....	54
5.6.1 Sample Test Data .....	54
5.7 Site Preparation .....	54
5.8 Data Presentation.....	54
5.9 System Installation.....	55
5.9.1 Hardware Setup .....	55

## **ABSTRACT**

Country Side Microfinance Ltd is one of the Institutions that have been facing problems. The problem faced by this institution is the paper work that is carried out in order to have the organization carry out its operations so as to maintain business processes going on. This has led to the organization to have a lot of delay in handling, disseminating and updating information regarding the monitoring, evaluation and analysis of information that was gathered about the institution and its clients from the daily activities and hence much time than necessary is lost in the slow manual process and bureaucratic procedures and methods. This is the reason the researcher saw it necessary to carry out the research and come out with recommendations at the end.

During the research, the methodology that was used to carry out the study was not different from the usual method used in most researches and studies. These are the methods used to gather data from the population using the following methods like interview, questionnaires, existing documents and observation. When the data was collected, it was then analyzed so as to come up with the requirements for the system to be built to solve the existing problem.

It was found out that, Country Side Microfinance does not have not computerized systems in place to handle their operations.

It is therefore recommended that the institution fully adopt a computerized system so as to help organize their operations and monitor and evaluate the performance of the institution in order to keep track of the loan and savings systems.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 General Introduction**

Today, almost everything is being computerized. Each and every aspect of life is being and has been invaded by technology. Digital convergence is becoming a reality because of increased technological advancement. The convergence is greatly attributed to general growth in software development and general computer platform. Application development is making it possible to combine activities that were initially performed by more people into being performed by just a device/computer with the help of an operator. All these are enabled by the advancement in software engineering

Poverty eradication is one area/aspect of life that is directly affected or touched by this trend in computer technological advancement. In order to eradicate poverty, Country side microfinance and many other institutions have extended their services to cover bigger parts of rural, urban and peri-urban areas in order to boost the business of low income earners so as to increase their savings ability and hence increase their standard of living.

To increase their service delivery to the poor people and clients, and to increase the capacity of the employees/workers, this institution is therefore to embrace the use of computerized systems to issue and monitor the loan system efficiently and effectively so as to closely monitor the output and delivery of the services.

This therefore calls for an application development for the system that will handle specifically that. This is because every institution is unique in its operations and management; the general software for the loan is not very effective and lacks so many functionalities in it with regard to the local market.

#### **1.2 Background of the study**

Country Side Microfinance is a local Credit Institution that came into existence two years ago, but operationally it has been there for a year and is growing and gradually expanding



its branches in major towns of Uganda. Currently it has ten branches country wide, most of them in upcountry where there is a lot of poverty.

Currently, this institution is basically carrying its operations manually, that is doing everything on papers and this is the major problem they have. Because of this, it has resulted in so many other problems such as delayed update time, inconsistent data in the data cabinets, and poor method of monitoring and evaluating the performance of the institution. This has led to the institution to lose money to clients due to poor method of doing work and inaccurate system and the clients too lose money to the institution in a way they do not expect or suspect hence causing mistrust between the institution and the clients.

### **1.3 Problem Statement**

The problem facing Country Side Microfinance is the inefficient management and ineffective way of operation, which is a result of lack of computerized system in place so as to perform everything automatically. This problem is generally the poor way of managing, monitoring and tracking operations and especially the loan system for evaluation. Due to this, the analysis of information regarding such systems is always based on half processed information. Because of that, the monitoring process has been very slow (untimely) and that has directly affected the loan retrieval/repayment and sometime has led to the institution losing money in poor loan servicing or the client has lost money to the institution in that most times the employees take advantage of the system's weakness to exploit, cone, extort money from unsuspecting and illiterate clients. And this has made Country Side Microfinance Institution to lose many clients. Clients tend to run away to other institutions where services are better and where charges are less, or what they termed as pocket friendly. Reasons clients give for departing a MFI program tend to relate more to the lending methodology than problems with loan repayment. Most drop-outs complain about inadequate loan amounts and terms, high interest rates, mandatory weekly meetings and having to pay for group members who default.

Therefore, due to the above mentioned problems, it was suggested that the institution fully adopt a computerized system to help control the above problems and make the institution gain control of its operations and fully monitor and evaluate the performance of the institution so as to increase efficiency and effectiveness of the institution.

## **1.4 Objectives**

The major objective of this research is to investigate the problems affecting Country Side Microfinance and provide a computer based solution to the problem.

### **1.4.1 Specific Objectives**

- i. To investigate the existing loopholes, weaknesses and challenges of Country Side Microfinance Credit System
- ii. To design a Microfinance Credit Monitoring and Tracking System that will address the weaknesses
- iii. To implement the new system that has been designed
- iv. To test the system for consistency before it is accepted for use

## **1.5 Significance of the research**

- i. The institution will be in position to have more control over the system in that, they have a pool of reliable data which is of integrity, again which can be based on for analysis and decision making
- ii. There is going to be more security on the System than before, because the new System will be a network based and therefore the data will be on a server and hence very secure compared to the papers that were attracting a lot of risks to it
- iii. The clients are also in position to benefit from the new System in that, the time taken to evaluate and process is greatly reduced and the interest is calculated by the System and therefore is more likely to be free from human calculation errors
- iv. The institution is also able to monitor the progress and the pattern of how clients are servicing their loans and this therefore gives management a good position on how to decide.
- v. To the researcher, this system will make him gain more skills in research in addition to satisfaction derived from having contributed to developing a solution to some of the problems affecting the community.



## **1.6 Scope of the research**

This research is a software development project that was undertaken to ease the process of loan issuance, monitoring and management. This is as regards the poverty alleviation plan and plan for modernization of Agriculture and which aims at improving the living standards of the rural and peri-urban poor, and to improve the ability and capability of the Microfinance institution in handling such issues and also to increase the productivity and empower and build the capacity of the Country Side Microfinance Institute's employees.

This being a wide area, the researcher therefore found himself being restricted to the areas that are only pertinent to the research in general and to the case study in particular.

### **1.6.1 Technological Scope**

The research is therefore confined to the Savings and Credit aspects of the Microfinance Institution. This therefore means that other Information Systems in the Institution such as Human Resource, Marketing or any other Information Systems were not handled during this study. This therefore involved field investigation, database design, interface design and scripting using Computer Programming Language (Visual Basic.Net) so as to develop the application to address the above mentioned problem.

### **1.6.2 Geographic Scope**

The research was therefore restricted to the Main Branch of Country side Microfinance based in Kampala District in order to avoid unnecessary expenses in transport to its upcountry branches. Also because, the main branch controls all other branches, it wasn't necessary to obtain information from other branches, as the information would be the same.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter discusses in detail of the literature issues regarding the Microfinance Credit Scheme, component by component and explaining the functionality of each component and how it came to be built. The components that make up the Microfinance Credit System basically include the following

- a) An information System
- b) A Monitoring system

#### **2.1 Information System**

According to O'Brien (2003), an information system can be any organized combination of people, hardware, software, communications networks, and data resources that collects, transforms and disseminates information in an organization. People have relied on Information Systems to communicate to each other using a variety of physical devices (hardware), information processing instructions and procedures (software), computer channels (networks), and stored data (data resources) since the dawn of civilization.

A major function of an information system in today's world is that it's an important area of business that is also important in business success as functions of accounting, finance, operations management, marketing, and human resources. It's also an important contributor to operational efficiency, employee production and morale, and customer service and satisfaction and a major source of information and support needed to promote effective decision making by managers and business professional.

According to Whitten *et al* (2000), an Information System is an arrangement of people, data, processes and interfaces that interact to support and improve day to day operations in a business as well as support the problem solving and decision making needs of management and users. An information system can exist with or without a computer, but when Information Technology is used, it significantly expands the power and potential of most Information Systems.

He further described Management Information System as an Information System application that provides for management oriented reporting. These reports are usually generated on a predetermined schedule and appear in prearranged format.

The Microfinance Institution is made up of two major systems that run together in order to provide services to the people / clients.

## **2.2 The Savings System**

The Savings sub-system is part of the Microfinance Credit system for which the application is being developed. Savings is open to every body, that is open to the general public but the loan system is only for those who have a savings account, in the institution. Therefore, opening a savings account is a gateway to getting access to the loan system. In other words, accessing the loan is conditional, and depends on whether you have an account with them or not.

Once you have an account with them, there should be a minimum amount not less than 30% of the loan amount in order to secure a loan with this institution. This minimum amount is to act as part of security that the institution holds on to incase the client has problems with repaying the loan.

## **2.3 The Loan system**

The Microfinance Credit loan system is a Management Information system that comprise of an application developed in a Visual Basic.Net programming language as the front end and a database designed in a SQL Server 2005 database management system as the back end, to store the transaction data regarding the institutions saving, lending and information about clients generally. It is more of an accounting system, in other words, its an Accounting Management Information System.

The loan system also has different loan types that a client can chose from depending on how he qualifies for it. The different types of loans that exist in the institution consist of the following loan types;

- i. Business loan

- ii. Salary earners loan
- iii. Vehicle and Assets finance loan
- iv. School fees loan
- v. Mortgage loan

The system has constraints such as, before a client is granted loan, that client must possess an account with the institution. And another constraint is that for every loan amount, there must be a thirty percent (30%) of the loan amount deposited in the account to act as partial security of the loan taken.

Before a loan is granted to a client, the client must be an account holder with the institution and the account must have a balance of 30% of the loan amount applied for, then in that case the client has qualified for the loan.

Each loan type has its own interest rate but the duration of repayment depends on the client. The client has a choice to make of how long he wants to spend on paying back the loan, and that determines how much is the monthly payments he should be making so as to complete the loan in the specified/chosen time. Of course each loan type has a limit to the amount that can be taken at a time and if a customer or client is prompt and consistent in paying back the loan, that client is advised to top up the loan but at reduced interest rate.

## **2.4 Loan Systems Available in the Market**

Currently, there are many different microfinance management software that are available in the open market place. They are from different software companies and suitable for different kind of markets (Africa, Asia and Latin America) but generally they perform the same basic functions of managing the savings and the loan systems in the microfinance institutions.

However, these software are so general and are not customized therefore it lacks some functionalities with regard to the local market and the local operating environment. In other words, it does not satisfy some local user requirements and therefore not very satisfactory to assume it is all ok.

Below are some of the examples of the microfinance management software used in the market;

### 2.4.1 Micro Financier Standard Edition, v. 2.0

Micro Financier is an integrated software system exclusively designed and developed for management of Information and Financial Accounting for micro-finance credit societies. It is a well-managed IT solution with a comprehensive Research and Development plan, and a mechanism to grow the product in line with the growing experience of a wide customer base.

The Micro Financier has the following features

Accounting, Loan Portfolio Management, Deposits/Savings Management, Client Information/Relationship Management.

its interface is designed in English, and some other languages mostly the Latin American languages and runs on the following platforms Windows 9x, Windows NT, Windows XP, and the following servers platforms Windows 9x, Windows NT, Windows 2000, Windows ME, Windows XP. This software is programmed using Visual Basic for the Front End. And different versions have the following databases to hold its data MS Access, Oracle, SQL Server, MySQL

The screenshot shows the 'CreditScoring' window with the following fields and tables:

**Form Fields:**

- Cluster ID / Name: CLR
- Member Grp ID / Name: GRP
- Member ID / Name: Gk
- As on Date: 16/12/2006

**Table 1: Profile Variables and Weights**

Profile_Desc	Varie	Variable_Desc	Sele	Poin	Wear	Wear
Borrower Profile	1	Age	3	5	1	5
Borrower Profile	2	No. of Dependents	3	5	1	5
Borrower Profile	3	# Years residing in present Add	3	5	1	5
Borrower Profile	4	Occupation of Spouse/ Other Income	3	5	1	5
Borrower Profile	5	Place of Birth of Applicant	3	5	1	5
Borrower Profile	6	Ownership of Dwelling	3	5	1	5
Business Profile	7	Type of Business	2	3	1.5	4.5
Business Profile	8	Location of Business	2	3	1.5	4.5
Business Profile	9	Type of Shop or Stall	3	5	1.5	7.5
Business Profile	10	Years in Operation(Yrs)	2	3	1.5	4.5
Business Profile	11	Business Licence	2	3	1.5	4.5
Business Profile	12	No. Of Persons Employed full time in Business	2	3	1.5	4.5
Assets	13	Stock Inventory / Business Assets	1	1	1	1
Assets	14	Housing Hold Appliances and Equipment	2	3	1	3
Liabilities	15	# of Outstanding Loans	2	3	0.5	1.5

**Table 2: Option Details**

Optic	Option_Desc	Poin	Wear
1	30 & Below or >60	1	1
2	31-45	3	1
3	46-60	5	1

**Summary Statistics:**

- Total Points: 70
- Total Weight: 77
- Cash Flow Adj. Factor: 60
- Periodicity: Monthly
- Net Weekly Cash Flow: 14000
- No. of Installments: 24
- Max Loan Amt: 201600

**Buttons:** Report, Ok, Cancel, Close

Figure 2.1: A screenshot from the Micro Financier

Source: [www.microfinancier.com](http://www.microfinancier.com)

## **2.4.2 CommonCents 101 (A Micro-Finance & Banking Software)**

This is the most common microfinance software that is mostly used in East and central Africa. It is a user-friendly software that is easy to maintain and use so as to maintain efficiency.

### **2.4.2.1 Product Description:**

User-Friendly and A True Microfinance Software

CommonCents 101 Micro Finance and Banking Software is a window-based, menu-driven, diagram-button-driven and icon-driven system designed initially for Micro-Finance Institutions (MFIs). It is highly differentiated from a banking software because it is powered by modules and reports which facilitate and monitor group transactions but also take considerations of transactions by individual clients. CommonCents 101 is a 3-in-1 software because it highly integrates the Loan Tracking System, the Savings System, and the General Ledger System. This integration eliminates data-entry redundancy and makes data in the three areas consistent. This means that every transaction done in the Loan Tracking and/or Savings Modules has a corresponding journalized entry in the Financial System. This also means that savings transaction may also be integrated during loan transactions (ex. Release, Payment and Adjustment). Through its years of usage and operations, banking modules and reports have been added to the software which makes the system functional for banks with simple operations. Additional banking features and reports are continuously added and enhanced to answer the growing information and reportorial requirements of banks with relatively more-advanced operations.

### **2.4.2.2 Dynamic Software**

CommonCents 101 Software is a software that can be easily upgraded because it uses Object-Oriented Programming (OOP) and N-Tier Architecture in its design and development. (You may view the CommonCents 101 n-Tier diagram). In some degree, it adapts the Service Oriented Architecture (SOA) because it uses reusable classes (tiers or services). It also uses data classes and forms produced by CENTECH's VB6 Form and DataClass Generator. The software is coded using Visual Basic 6.0 and uses Crystal Report 8.0 as its report designer.



### 2.4.2.3 Scalable Database

The data of the CommonCents 101 software can either be stored in MS Access 2000 or MS SQL Server 2000 databases. This advanced IT methodology makes future enhancement relatively easy and fast. Furthermore, client-partners will have no problem in the future if they decide to upgrade their database to a higher level or version.

The screenshot displays the 'CommonCents 101' software window. The 'Deposit Form' is active, showing a 'Filtering Info Frame' for listing clients. It includes checkboxes for 'Use Last Name as Filter', 'Use Center as Filter', 'Use MAF as Filter', and 'MAF Member?'. Below this, there's a 'Transactions' list with a selected entry '010001409 150.00'. A 'Select a Branch' dropdown is set to 'Bohol'. The 'Prepared By' field is 'CBSicad', and the 'Approved Date' is '08/20/2005'. Other fields include 'Checked By', 'Approved By', 'Req. No: 1409', 'DocNo: 1409', and 'Ref. No: 010001409'. A 'Transaction Info' section contains a table with client names and amounts. A red instruction 'Double Click Client's Name Below To Enter Amount' is present. The table has columns: Name, Total, CBU, and MAF. The data rows are: AGASSI, ANDREI 1003001 (Total: 50.00, CBU: 50.00, MAF: 0.00) and FEDERER, ROGER 1003001 (Total: 100.00, CBU: 100.00, MAF: 0.00). The 'Transaction Grid' is at the bottom. The status bar shows 'Deposit Form', the database path '.\Database\CCTrial.mdb', and user 'CBSicad'.

Name	Total	CBU	MAF
AGASSI, ANDREI 1003001	50.00	50.00	0.00
FEDERER, ROGER 1003001	100.00	100.00	0.00

Figure 2.2: A Screenshot of the CommonCents 101 Microfinance software

Source: [www.commoncents101.com](http://www.commoncents101.com)

## 2.5 Management Information System

Ralph M (1989) described a Management Information System as an organized collection of people, procedures, database and devices used together to support/provide routine information to manager and decision makers. The focus of a Management Information system is an operational efficiency. Marketing, production, finance and other functional



areas are supported by Management Information Systems and linked through a database. Management Information Systems typically provide standard reports generated with data and information from the system.

According to Whitten *et al* (2000), an Information System is an arrangement of people, data, processes and interfaces that interact to support and improve day to day operations in a business as well as support the problem solving and decision making needs of management and users. An information system can exist with or without a computer, but when Information Technology is used, it significantly expands the power and potential of most Information Systems.

He further described Management Information System as an Information System application that provides for management oriented reporting. These reports are usually generated on a predetermined schedule and appear in prearranged format.

According to Williams *et al* (pp 468), Management Information System is a computer based Information System that uses data recorded by Transaction Processing System (TPS) as an input into programs that produce routine reports as output, and has the following features:

i. Input and output

This consists of processed transaction data such as bills, orders and paychecks, plus some other internal data. Output consists of summarized, structured reports, budget summaries, production schedules and the like.

ii. For middle managers

An information system is intended principally to assist middle managers. It helps them with decisions, enables them to spot trends and get an over view of current business activities.

iii. Draws from all departments

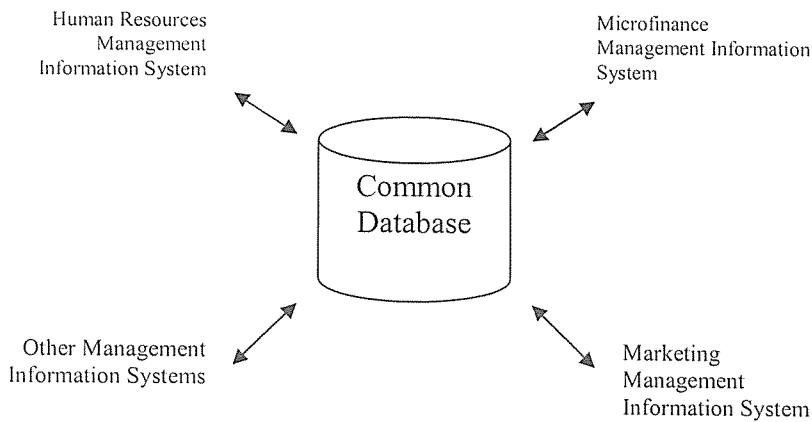
It draws from all departments or functional areas and not just one.

iv. Produces several kinds of reports

Managers at this level usually receive information in the form of several kinds of reports, summary, exception, periodical and on – demand.



And according to the researcher, a Management Information System is a collection of resources (human and otherwise), equipment (hardware), procedures (policies), processes (software) and the channel (communication network) to gather, store, process and disseminate data and information in an organization and to all the stakeholders.



**Figure 2.3: Management Information System**

Source: Stair and Reynolds, Principles of Information Systems (1998)

### 2.5.1 Characteristics of Management Information Systems

Management Information Systems are characterized by use of Information System to produce reports. The reports that were produced such systems include the following:

**i. Scheduled reports**

These are reports that were produced periodically – daily, weekly, monthly, quarterly, semi-annually, and annually, and were printed regular basis. They helped managers perform their duties. Other scheduled reports were used to help managers from a variety of departments control customers credit, payment to suppliers, inventory level, performance of sales representative and more.

**ii. Demand reports**

These were reports that were developed to give decision makers certain information upon request, e.g. prior to closing a days work operations, a branch manager might seek a demand report on how many new or old clients applied for loan on that day. This report will tell the manager the performance of the loan department.

**iii. Exception reports**

These reports describe unusual or critical situations such as low inventory levels. This report is only produced if certain conditions exist – such as inventory falling below a specified level.

### **2.5.2 Roles of MIS**

By 1960s, the role of MIS was transaction processing, record keeping, accounting and other electronic data processing.

- i. MIS focused on developing business applications that provided managerial end users with predefined management reports that would give managers the information they needed for decision making purpose.
- ii. To provide managerial end user with ad hoc and interactive support of their decision making process. This support would be tailored to the unique decision making styles of managers as they confronted specific types of problems in the real world.
- iii. Provide information in the form of reports and display to managers and many business professionals e.g. Branch/loan manager may use their networked computers to get instantaneous display about loan information and trend/pattern in borrowing and returning/servicing loans.

### **2.6 Designing the Management Information System**

A Management Information System designed using the System Development Life Cycle (SDLC), Hutchinson (2000). He defines SDLC as the process by which the system is conceived, developed and implemented. This process is made of two parts; with the first forming the conceptual/logical design and they include the following;

Problem identification

Data gathering – collecting data related to the problem

Data analysis – understanding the data, and how to process it in order to solve the problem

Requirement analysis – determining requirements for the new system

The second part of the SDLC comprises the following;

System design – design the interfaces

Coding – writing the codes in a programming language

Testing – checking for errors and efficiency

Implementation – putting the new system to use

Maintenance – monitoring performance, keep track of changes and modifications

## **2.7 Data storage and retrieval**

The method that was used to store data in the tables for this system is the one described by Post (2000), and that is the creation of indices of the data approach. He further emphasized that an index is the most common method used to provide faster data access. It sorts and stores the key values from the original table along with a pointer to the rest of the data in each row. Index storage approach is most preferred because it enables fast, sorted access to a table based on any criteria.

Indices generally provide a clear advantage over straight sequence files because; they support high speed access to any data columns. Use of indexed tables is a common method of storing data as they provide fast random and sequential access to tables from a predefined sort condition. Additional gains were made because indices were made small enough to fit in the Random Access Memory (RAM) during processing. The system can then rapidly search the index and use the pointer to retrieve the desired data with much reduced access to the hard disk.

## **2.8 Management Information System Performance and Standards**

Ralph *et al* (1989) pointed out that, the performance of a Management Information System can be measured in various ways, with the following being the most important of the ways.

Efficiency is a measure of what is produced divided by what is consumed. It ranges from 0 - 100%. Efficiency is a relative term used to compare systems.

Effectiveness is a measure of the extent to which a system achieves its goals. It can be compiled by dividing the goals, e.g. an institution may have a goal to increase the number of clients by 200 (new). A new computerized system may be designed to achieve this goal. Actual increase in the new clients' numbers however is only 165; therefore the effectiveness of this system is only 82.5%. Effectiveness, like efficiency is a relative term used to compare systems.

## **2.9 Tools Used**

To design a system that can be accessed concurrently and from anywhere on a network, it calls for several considerations to be made. This is made of a point of control and administration (server) and access points for quick and easy access by users (clients). The server and the client need to effectively and efficiently communicate so that they provide the necessary information that is required by the users.

The server resides in one location and the clients are then positioned anywhere else within the network. The architecture of the final product therefore looks like the one in the figure below.

### **2.9.1 Visual Basic.Net**

This is the programming language that was used to do the coding of the front end of the application so as to interact with the database (backend). The front end makes it possible for the users to input data into the data base and also to extract information from the database after the data is processed by the application using the codes that were written in the from end. These codes processes data and present them in an acceptable format in which can make sense to the user so as to provide information of great meaning, so as to be used for decision making and forecasting, which are the reasons information is important.

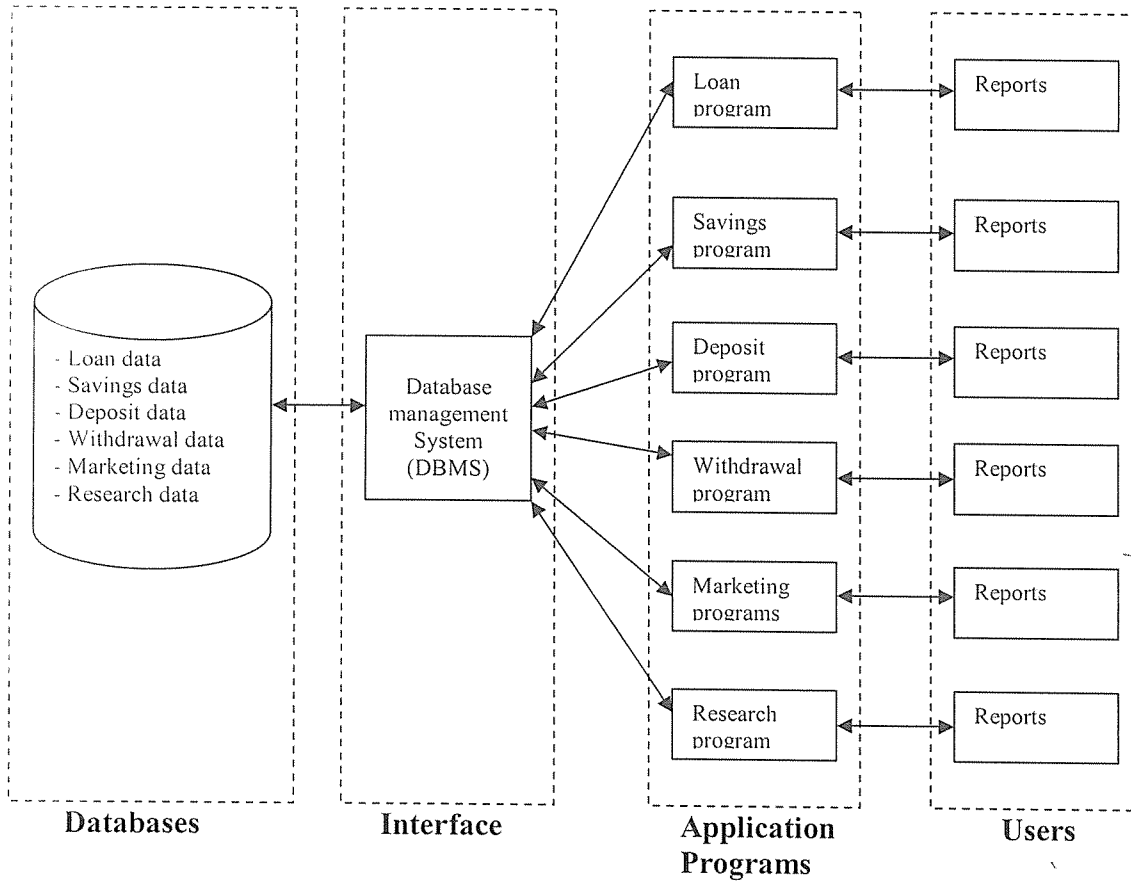
### **2.9.2 SQL Server 2005**

This is a database management system (DBMS) that was used to design the database (Backend). It is a very powerful tool in the design of databases because of its security and stability. This software also has the capability to be used on a network concurrently by so many users without getting any problem unlike some other database management systems such as access that cannot support a certain number of users on the network, after which this number is exceeded; it tends to be slow and frustrating in performance.

### **2.9.3 Crystal Reports**

This is another software that is used in conjunction with the above two (that is VB.NET and SQL Server 2005) to generate reports and represent information to the users in many

different formats and styles so as to make sense to the user or management level in order to be in position to use it for decision making and use it as a base for forecasting.



**Figure 2.4: Database integration with a MIS**

Source: Stair and Reynolds, Principles of Information Systems (1998)

## 2.10 Relational Databases

Relational Database Management Systems (RDBMS) provides a great way to store, access and retrieve complex information. Major complex and important databases make use of the structured query language (SQL). SQL Server 2005 is one of such RDBMS that is common today, because of the strengths it has and the security it provides to the data and due to the ease of use.

Other RDBMSs are open source such as MySQL, others that are not open-source include those such as Oracle, Sybase, Informix, IBM's DB2.

Stair and Reynolds categorically stated that, when building a database, careful considerations have to be given to these questions:

- i. *Content*: what data is to be collected and at what cost?
- ii. *Access*: what data is to be provided to which user when appropriate?
- iii. *Logical structure*: how is the data to be arranged so as to make sense to the given user?
- iv. *Physical organization*: where is the data to be physically located?

## **2.11 Network Considerations**

This Microfinance Management Information System also has the component of the network that is integrated so as to make information sharing and data transfer efficient and fast through out the organization / institution. The network also makes it possible to have a client – server architecture where multiple computers are dedicated to special functions such as database management, printing, communications and program execution. These platforms are called servers and each server is accessed by all computers on the network. In such arrangements, the servers do all or most of the processing and transmit the results to the clients, thereby saving the client's CPU time and enhance the server's ability and capability.

## **2.12 Advantages of Client – Server architecture**

A server distributes programs and data files to the other computers (Clients) on the network as they request them. The client requests services from the server, provides a user interface and presents the results to the user. Once data is moved from the server to the client, the data may then be processed on the client. The followings are therefore the advantages of the client – server arrangement.

### ***2.12.1 Reduced cost potential***

The functionality achieved with client/server computing can exceed that provided by traditional mini-computing or even mainframe-based computer system. And besides, vendor contracts for workstations software and hardware support are far cheaper than for

mainframe computers. This downsizing therefore causes significant savings in reduced hardware and software support costs.

### ***2.12.2 Improved performance***

The most important difference between a file server and client server architecture is that the latter is much more effective and efficient in minimizing the size of traffic on the network. This is because, using this architecture, only data needed to satisfy user query is moved from the database in the server to the client device, whereas the entire file is sent in the file server computing. The smaller the amount of data being sent on the network also greatly reduces the amount of time needed for the user to receive a response.

### ***2.12.3 Increased security***

Security mechanisms can directly be implemented on the database server through the use of stored procedures. These procedures execute faster than the password protection and data validation rules attached to individual applications on a file server. They can also be shared among multiple applications.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This is the section that describes the methods and techniques which were used for data collection and analysis during the study. It also describes the reasons why these particular methods are preferred by the researcher. The tools that were chosen as appropriate to the study. The study is based on the issues of ICT in the monitoring and evaluating the performance of Country side microfinance credit/loan system and the capacity of those using the System.

#### **3.1 Study Area and Population**

The area that was taken for study included but not limited to the main branch office of Country Side Microfinance Institution. This area was taken because it's the head branch of the institution and because it's centrally located to manage and control all other branches. This also means that the population taken for the study was also restricted in the above place. This included the clients in that office and the staff. But not all staff were interviewed and not all clients were interviewed, but just a few were taken to represent the whole and entire population of the study, since it was so big to be covered by questionnaires and interviews and therefore would have taken a lot of time or too much time in the exercise, which would have resulted in much resources and time.

#### **3.2 Research Design**

During the study, the design that was used for the study is the cross-sectional survey, and the methods of data collection that were used in the study were the questionnaires, interviews and observation so as to gather both qualitative and quantitative data. And the system was designed following the Systems Development Life Cycle (SDLC) method of Rapid Application Development (RAD)





### 3.3 Data Sources

The source of data that was used in the study was basically both primary and secondary. Primary sources included interviews, questionnaires and some minor observations while the secondary sources included the documents of all categories, such as text books, journals, magazines, company records, seminar presentations, news paper articles and the internet, brochures, leaflets and flyers.

### 3.4 Data Collection Methods

The researcher did not restrict/limit itself to only one method of data gathering, but a combination of different methods was applied in the study to gather data that is necessary for the building, development and implementation of the microfinance credit loan system. These methods included interviews, questionnaires, and records, as discussed below.

#### 3.4.1 Interview.

Since the population was not big, different groups of people involved (stakeholders) were interviewed at different times so as to obtain data and literature and other material from them, in order to be able to use this data to build the microfinance management system effectively.

The groups of people that were interviewed included the management / administrative, system owners, users and clients picked at random for interview.

And this method is most suitable because of the following reasons

- a) During the interview, the interviewee can express more and reveal more data and therefore verbal explanation leads to more understanding.
- b) Also it's because, during the interview, the interviewer can ask more questions regarding some unclear expressions and hence leads to more data being gathered.

#### 3.4.2 Questionnaire

Simple sample questions were designed and distributed to different groups of people including the users of the system and management so as to obtain relevant data that would otherwise not have been collected during interview. Identity of the respondents remains completely anonymous

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### **3.4.3 Existing Documents Review**

Other data necessary for the design and development of the microfinance management system were got from the institutions documents, especially the client forms, like client detail forms, account application/opening forms, a loan application form and so on.

### **3.5 Data Presentation**

The finding and the information in this study were then presented by use of quantitative and non – quantitative information through narration and providing the statistical results from the data collection. This research studies the works of the other authors, discusses their opinions and compares their analysis to the findings of the research through the interviews, questionnaires that were performed by the researcher.

### **3.6 System Design**

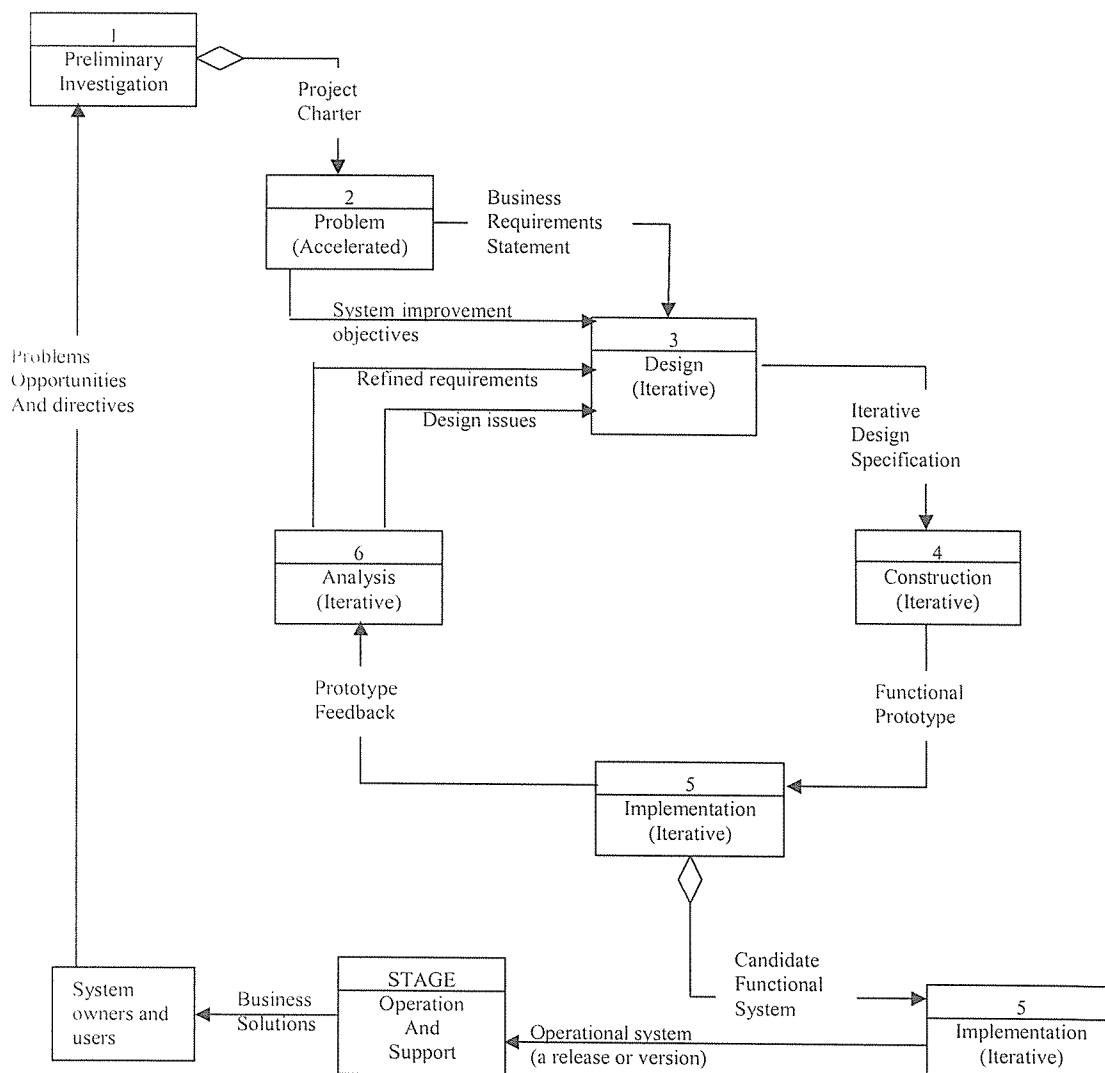
The System Design followed the Systems Development Life Cycle using the method of Rapid Application Development.

#### **3.6.1 Rapid Application Development (RAD)**

Rapid Application Development has become a popular route for accelerating systems development, as a response to faster pace of the economy.

This technique emphasizes extensive user involvement in the rapid and evolutionary construction of the working prototypes of a system to accelerate the system development process. RAD is sometimes called spiral approach because you repeatedly spiral through the phases to construct a system in various degrees of completeness and complexity. RAD uses prototypes to accelerate requirements analysis and system design.

The basic principle behind prototyping is that users know what they want when they see it working. In RAD, a prototype eventually evolves into the final Information System. RAD is illustrated below



**Figure 3.1: Rapid Application Development**

Source: Whitten, Bentley and Dittman, Systems analysis and Design Methods

During the development process, the following are the activities that took place.

### 1. Preliminary investigation

During preliminary investigations, problems, opportunities and objectives were identified and presented for analysis. The investigation was done using a variety of methods such as interviews, questionnaires observations and other documents.

From the problem definition, requirements identification was carried out, scope was set and project planning started.

## **2. Problems analysis**

Problem analysis, requirements analysis are consolidated into a single accelerated analysis phase. The analysis phase involved a clear understanding of the problems and requirements so as to come up with an Information System that solves the identified problems and satisfies user requirements. During this stage, activities were carried out in brain storming session and question and answer approach so as to come up with a all round system. The people involved in the brainstorming session includes all the stakeholders, that is system owners, builders, project managers, system users and others who don't use the system.

## **3. Design**

When the processes of investigation and analysis were done, the design stage was then entered into. During design, input and output specifications were design, processing and interfaces were then designed as well. As part of the design, various reports were formulated to be the systems output to the user incase the user requests for information from the system. The design led to coding of which the codes were later integrated together to create the final prototype.

## **4. Implementation**

The system was then constructed using Visual Basic.NET (VB.NET) to design the front end (Application). The application is the software that was designed to access the database (Back End) and interact with it so as to manipulate the data in the database in order to output important information and also to be used to input data into the database. While the back end was designed using (Microsoft SQL Server 2005) a Database Management System. The database is used to store information in tables so as to be accessed later on if the needs arise. The data that was stored in the database include data about the loan borrowing, savings and credit, clients' patterns of loan repayment, and many other important data that was relevant to the institution.

This will be a very secure system where access to the System will be on users and privilege granted to that user in the privilege level table. The system will be implemented in a network environment, meaning that the database will sit on a server that will be controlled

centrally by an administrator, who will then monitor the performance of the system and controls its access.

## **5. Implementation and Testing**

Implementation is the process of putting the system to use. This system is implemented on a network and the database resides on a central server and accessed remotely by users through client computers. There has to be a Central Computer (server) hardware and software and a networking software to control the computers on the network and to act as a central repository for data and software programs that can be shared among all users of the network and implement security of the infrastructure and the programs that run the network and allow data and information access.

### **a) Unit testing**

This is a method of testing that verifies the individual components of source code are working properly. A unit is the smallest testable part of an application.

Testing was performed to ensure that the software was working correctly and efficiently. Testing was generally focused on two areas, internal efficiency and external software which were functioning according to top system design, and that it was performing all the required functions.

The application was tested at each stage of module development. Each module was tested individually to ensure quality and compatibility and to establish whether each module performed the required function.

The classes that make up the savings component were individually tested before they were integrated into the savings component and all the classes that make up the loan component were as well tested individually to make sure functioning is complete before integrating them into the loan component.

### **b) System testing**

After unit testing, the units are then integrated into one system. This system is tested as one entire component. System testing is performed on the entire system in the context of a Functional Requirement Specifications (FRS) and or a System Requirement Specification (SRS). It is an investigatory testing phase, where the focus is to have almost a destructive

attitude and test not only the design, but also the behavior and even the believed expectations of the customer. It is also intended to test up to and beyond the bounds defined in the software/hardware requirements specification(s).

During testing, both correct and junk data is used to provide input to the system and the behavior of the system is monitored in relation to the kind of input that was provided.

It is also during testing that the system is subjected to be tested for acceptance by users. If it does not pass user acceptance then the system is taken for adjustment in order to meet every users needs so as to pass user acceptance testing.

After passing user acceptance testing, the system is finally passed and commissioned for use.

## **6. Maintenance**

After passing user acceptance testing and commissioning the system, it is to maintained through out its life. This is because the system is dynamic, it keeps on changing and evolving and also due to the fact that user requirements change over time, this calls for source code to maintained in line with user requirements and the systems is expected to perform more and have much more capability in the future. Also due to change in technology both hardware and software, the system will have to be modified to fit in with the new technology. Maintenance is an endless process, it continues until the system is discarded.

## **3.7 Limitations of the Study**

Just like other projects in this same line (software development), it is inappropriate to imagine all was well till completion of the project tasks. Some of the major problems encountered by the researcher during the study include the following

### **i. Unwillingness to give Information**

In most organizations and institutions, the respondents were not very willing to release information while others did not give any information at all. Some of them considered such interviews as a means to investigate and spy on their organization or their methods of operation, therefore it made it so hard for the researcher to gain data necessary for the design and development of the Software.

**ii. Power problem**

Many times as a common practice today by the electricity authorities, power is not available due to load shedding and rationing which has really slowed down the work (development of the software), since without power the computer cannot be used anyway.

**iii. Other obligations**

Since this is a multitasking world, therefore, besides the study, there were other duties that were directly assigned to the researcher that he could not forego, this also contributed much to the delay of the study since it's not so easy to divide time between the study and other duties

**iv. Funding**

Funding was quite inadequate since the research did not attract any kind of funding from any other source, meaning that all the study was directly funded by the researcher. This therefore, made it so hard to cater for all the research needs like communication, transport, meals, stationery and so on.

## **CHAPTER FOUR**

### **SYSTEMS ANALYSIS AND DESIGN**

#### **4.0 Introduction**

This chapter therefore presents the analysis from the different data collection methods which include questionnaires, interviews and observation. It also describes the experiments carried out during the study.

It also presents the information extracted from the data collected during the study and analysis was derived from the various findings

To make a comparative analysis of the institutions performance, a survey rating of all parameters used, and where people in the industry were asked to give their opinion in the matter, each of them sighting their own reasons and for each rating.

#### **4.1 Investigating the relevance of the system**

A survey was done to determine the necessity of the system and to find out how the system would be implemented. There were surveys which had to find out the following underlying themes.

- i. The problems leading to drop out of the clients of the institution and the ease with which loans can be evaluated before it is granted to clients.  
Both clients and staff (workers/users) of the institution at different levels were interviewed so as to find out what problems.
- ii. Suggestions were also sought from the stakeholders on how best they think those problems can be addressed in order to bring them under control so as to harmonize performance and relationship between clients and staff.

#### **4.2 Analysis of the Requirement**

This analysis was carried out to determine what would be required in order for the project to meet its design goals and objectives. The process mostly involved singling out the solutions that the application should provide in terms of software and hardware requirements and the general functionality of the system, its performance, ease of use, and portability.



#### 4.2.1 System Requirements

##### 4.2.1.1 Software Requirements

- i.* Network / Server software (2003)
- ii.* Windows (OS) Software XP
- iii.* Programming language software (Visual Studio 2005 – (VB.NET))
- iv.* Database Management System software (SQL Server 2005)

##### 4.2.1.2 Hardware Requirements

- |                                  |       |
|----------------------------------|-------|
| <i>i.</i> Server machine (Dell)  | 1     |
| <i>ii.</i> Client machines       | 20    |
| <i>iii.</i> Network cables       | 1roll |
| <i>iv.</i> RJ 45 Connectors      | 50    |
| <i>v.</i> Conduits/trucking      | 100m  |
| <i>vi.</i> Wall drilling machine | 1     |
| <i>vii.</i> Switches (32 ports)  | 3     |

#### 4.2.2 User Requirements

This is the description of the functional and non – functional requirement requirements so that they are understandable by the system users who don't have detailed technical knowledge, and also specify external behaviors of the system. The system should provide the following user requirements;

- i.* The user must provide his/her username and password in order to access the system resources and to be able to perform a task within the system.
- ii.* The user must not be able to alter anything on the system, unless he/she has the privileges to do so.
- iii.* The system should facilitate communication between departments and individuals
- iv.* The system should be user friendly, fast, and be able to generate many reports for management and decision makers to use when they needed.

- v. The system should also be able to minimize data inconsistency, wastage of storage space and redundancy.

#### **4.2.2.1 Functional Requirements**

These are statements of services the system should provide, how these services should react to a particular inputs and how it should behave input

Based on the information got from interviews, the system should meet the following functional requirements.

- i. The system shall provide appropriate access to the users to search for results and other information.
- ii. The system provides security for the data where administrator shall be able to alter, modify, delete and update the data in the database.
- iii. The system accepts inputs from users by entering data and access information stored in the database by entering their usernames and passwords which are then validated before access is finally granted to that particular user.
- iv. Data is stored and retrieved from the database.

#### **4.2.2.2 Non – functional requirements**

These are requirements which are not directly concerned with the specific functions delivered by the system. They are constraints on the services on the functions offered by the system. The non – functional requirements of the Microfinance Credit Savings and Loan system includes the following;

- i. Data integrity is solved by the use of validation rules
- ii. Not all users should make changes to the system, only users in one department can make changes on their departments' data.
- iii. Access is restricted to only authorized users.

#### **4.5 Constraints**

These are rules set in order to maintain the business processes and rules of the institution so as to achieve the set goals and objectives.

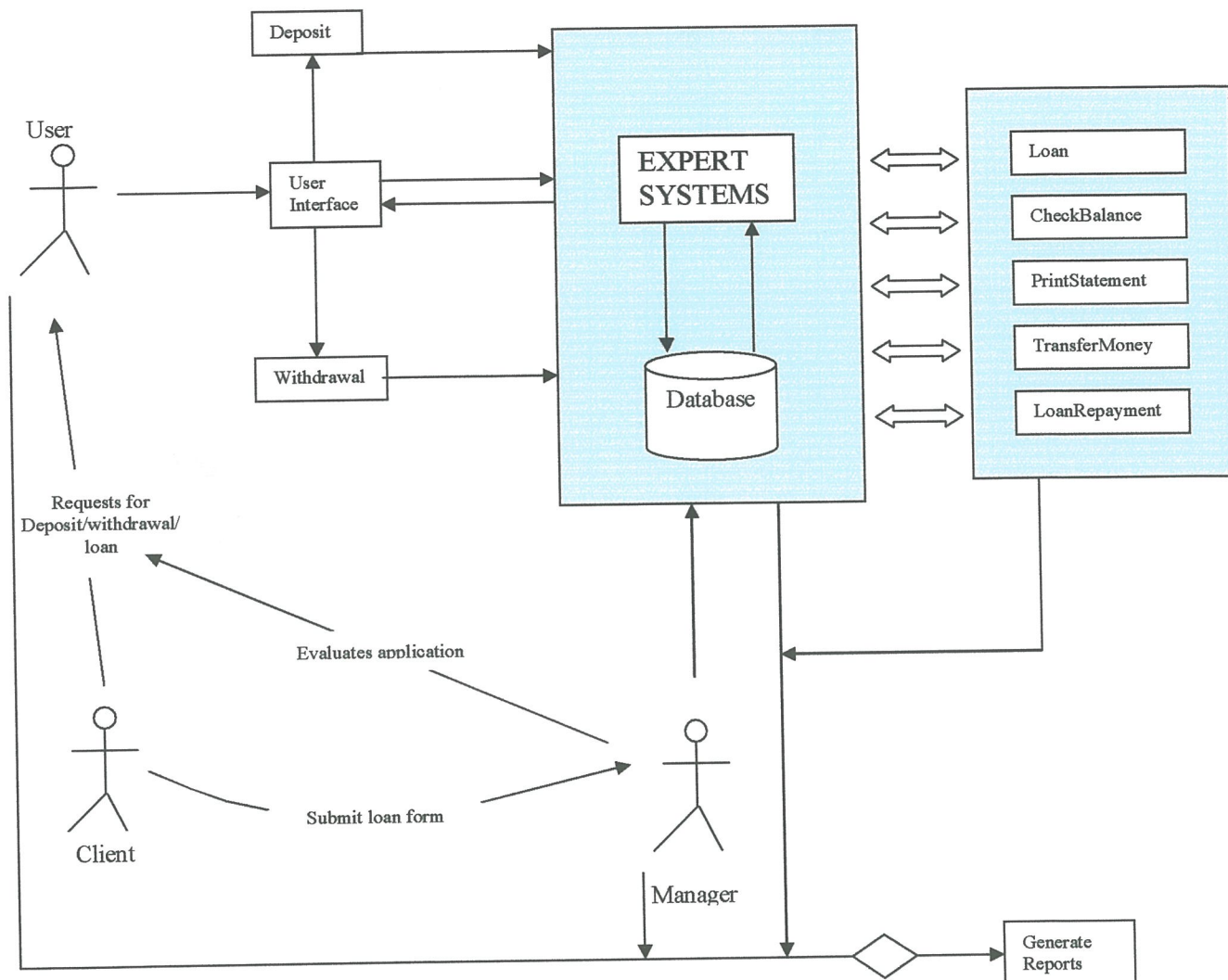
#### **4.6 Conceptual Framework**

The expert system is simulated to function in the same way decision support system carry out logical decisions based on the rules and procedures embedded in the expert system. The whole idea is conceived in the conceptual frame work shown in the diagram that follows.

The system is activated by factors such as users initiating actions to the system. Such actions can be a clients' request to withdraw an amount of money from the system or to deposit some amount of money into the account. Another initiative may be a request to take loan where the request is evaluated by the loan manager before it is granted t the client.

When the request is forwarded by the client to the user, the user then queries the database through a user interface and gets information from or posts information to the database, with the help of a Decision Support System (Expert System).

It's only the user and the managers who are able to generate reports from the system. In case the client wants to generate statements, he puts forward the request to the user and the user does that on their behalf. These reports are generated at specified intervals of time and periods. The database is the central repository of data and information. The expert system interacts with the database in order to provide information on request.

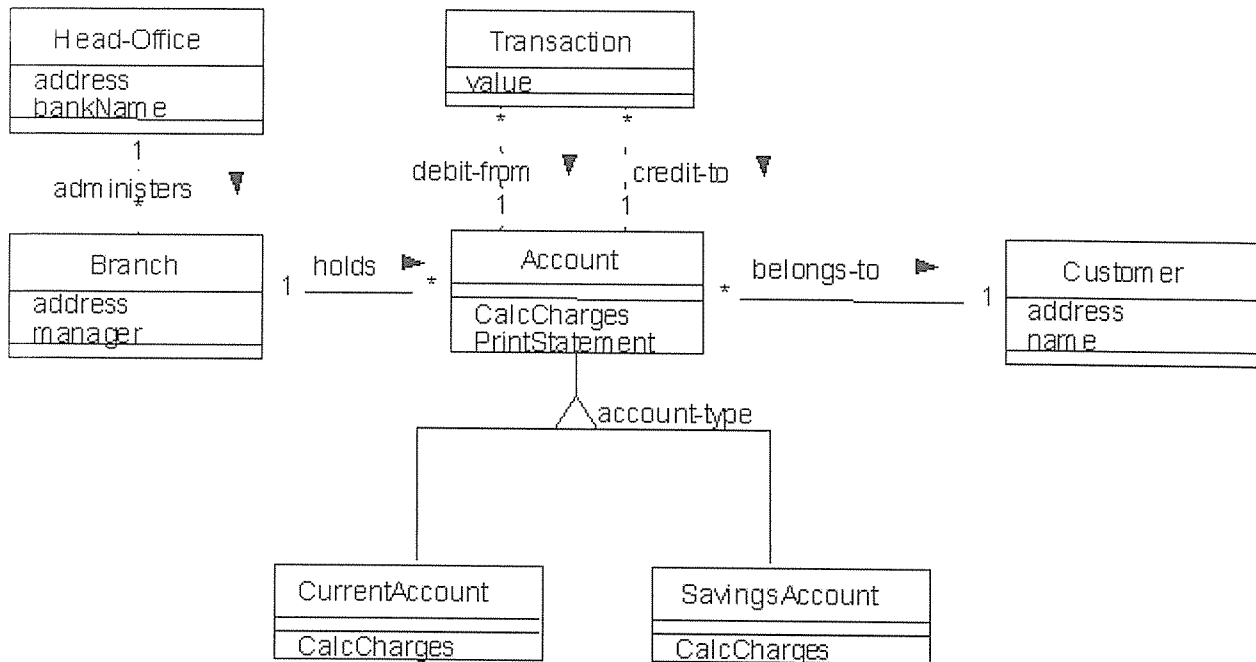


**Figure 4.1: Conceptual framework for the savings and credit system**

## 4.7 Model Management Diagrams

A model is a representation of a real object. This means that it is a description of the system's functional requirement in terms of use cases specifying that the program can be understood both by the user and the designers. Model management diagrams are the ones or elements that when organized make up a system through their relationships. These elements can be built or purchased so that they can be re-used or not.

### 4.7.1 Class Diagram- Relational



**Figure 4.2: Class diagram of the Savings and Credit System**

A Head-Office class (containing “bankName” and “address” fields, otherwise known as attributes) “administers” an (unspecified) number of Branch classes; whilst a Branch is “administered-by” exactly one Head-Office (the little black arrows indicates the direction in which the name given to a relationship should be read).

On the diagram this relationship is represented by the line from the Head-Office class to the Branch class which is labeled “administers”. The “1” at the Head-Office end of the line shows that exactly one Head-Office is associated with each Branch. The “\*” at the Branch end of the line shows that a Head-Office “administers” many Branches.

Similarly, a Branch class (which contains “manager” and “address” attributes) “holds” many Account classes; whilst each Account class “is-held-by” exactly one Branch. We can also see that we have determined that an Account class has a “CalcCharges” method (also known as operations or member functions) defined. This method, when invoked, will look at the detail stored within the Account object, and apply the appropriate (undoubtedly extortionate) charges to the Account. The second method - “PrintStatement” - will take the details of the Account and print them out.

The inheritance “triangle” (labelled “account-type”) shows that our system knows about three types of Account: the basic account (in this case a virtual class called Account), and

two specialised accounts - the CurrentAccount and SavingsAccount - which are derived from Account. The fact that the "CalcCharges" is shown in both sub-classes indicates that its implementation is re-defined for these classes (in C++ terms it is a virtual function). This is indicative of the fact that charges on a "SavingsAccount" are calculated in a completely different manner to charges on a "CurrentAccount".

Each Account "belongs-to" exactly one owner - the Customer class on the diagram. Customers, (clients of the institution) on the other hand, may have many Accounts. It's worth noting here that because an Account may "belong-to" a Customer, both CurrentAccounts and SavingsAccounts may also belong to a Customer. In other words, the "belongs-to" relationship between Accounts and Customers is inherited by the CurrentAccount and SavingsAccount classes. This fact simplifies the diagram considerably, removing the need for these relationships to be noted explicitly. This simplification will also be apparent in our final implementation of the system.

Finally, you can see that there are **two** relationships shown between the Account and the Transaction classes. This is because, in our banking system, each individual transaction (credit, debit, etc.) must have two associated accounts - the Account the money is "debit(ed)-from", and the Account the money is "credit(ed)-to". This enables the bank to record exactly where each transaction has come from, and gone to, so to speak.

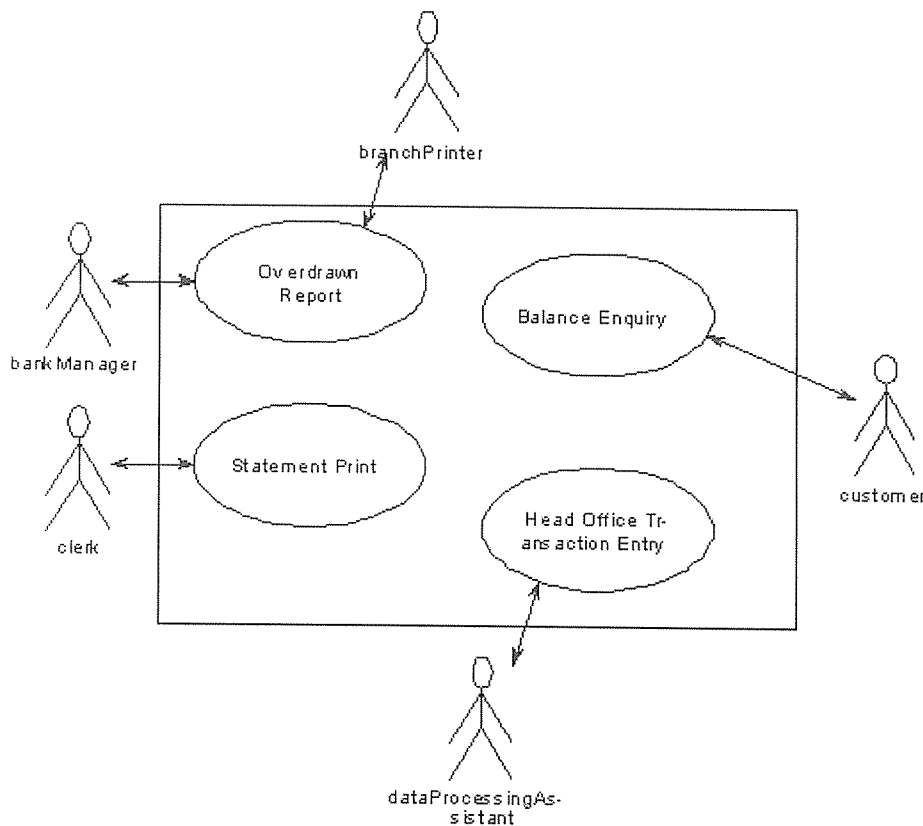
These last point brings out an interesting feature of what is being shown on an Object Model: clearly it wouldn't make sense for each Transaction to be "debit(ed)-from" and "credit(ed)-to" the same Account - no money would be transferred! Obviously, although the lines (relationships) are shown to the same Account class, they do not (necessarily) represent links to the same Account object at run-time.

A relationship shown on an Object Model indicates that some kind of run-time link will exist between two instances of the classes shown on the Object Model. Thus the Branch to Accounts relationship should be read as follows:

An instance of the class Branch will be linked to (zero to) many instances of the class Account, whilst an instance of the class Account will be linked to (one and only) one instance of the class Branch.

#### 4.7.2 Use Case Diagram

Use Cases are used to document system requirements. They provide a useful technique which, in conjunction with Object Modeling, helps us to clarify exactly *what* the system is supposed to do. Below is a use case diagram of the savings and credit system



**Figure 4.3: showing the use case diagram of savings and credit system**

1. The required business functions - that is, the type of operation you'd expect to find on the menu of the application once it had been developed. In this case we have identified the following functions:
  - a. Bank managers need to periodically print out a report detailing all the customers who are overdrawn; these appear on the branch printer
  - b. Customers may use the system for balance enquiries
  - c. Data processing staff use the system to do basic data entry (transactions on accounts)

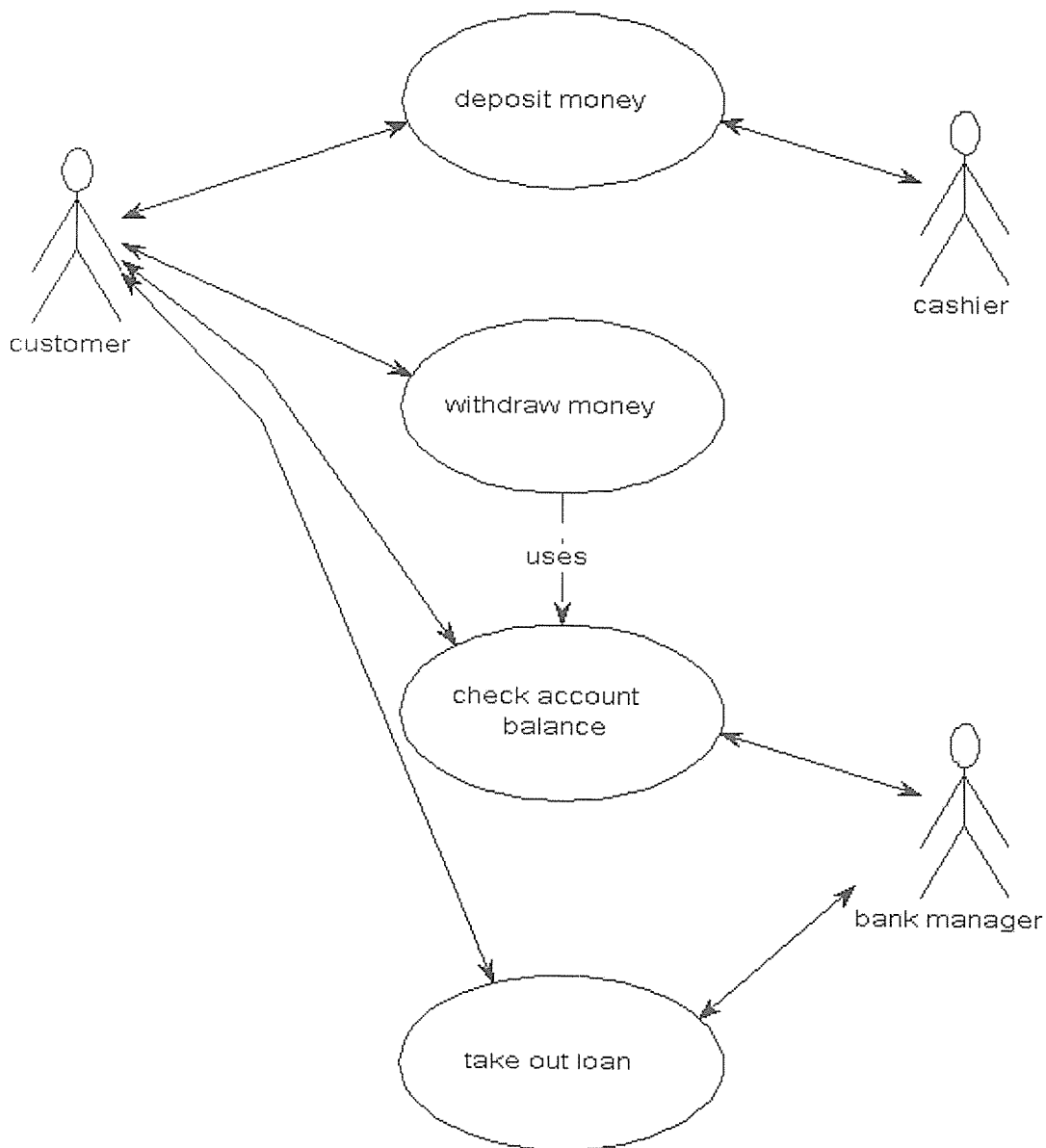
- d. Clerks may periodically request statements on behalf of Customers;
- 2. There are four distinct types of user of the system: Bank Managers; Clerks; Data Processing Assistants; and Customers. Each type of user typically has their own particular set of requirements for a system: hence identify user type's assists in identifying all the required system functions.

The Use Case diagramming technique allows us to make a first cut at defining the system requirements, and will help us in presenting these requirements back to the users of the system. It also partitions the system into single atomic business functions, which may be used as a basis for costing the system, or for planning a phased system delivery. In this case each successive phase would deliver further batches of Use Cases.

Use-cases allow us to describe at a high level the basic functionality of a system in terms of the various actors who need to interact with the system. We now consider how to flesh out those use-cases, and to link them into the object modeling method we considered earlier.

From the use-cases, which describe broad functionality, we begin to analyze the details of the functionality of the systems we want to construct. Use-cases are broken down into sequences of actions and events. These actions and events are mapped onto objects through object interaction diagrams.





**Figure 4.4: showing the interaction between the actors of the savings and credit system**

The deposit cash involves the following sequence of actions

- i. Complete pay in slip
- ii. Hand cash to cashier
- iii. Increase cash balance of account
- iv. Increase cashier's balance
- v. Increase bank's balance

- vi. Issue receipt to customer

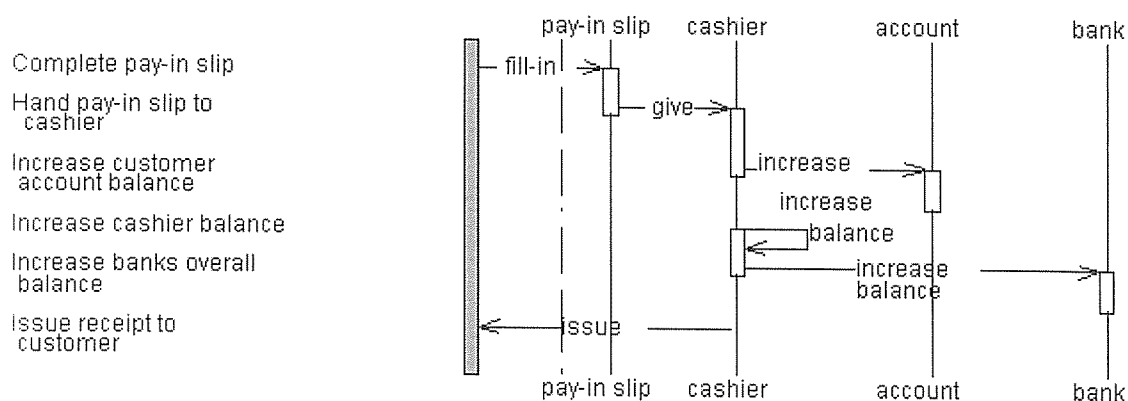
The withdraw cash involves the following sequence of actions

- i. Complete pay in slip
- ii. Hand cash to cashier
- iii. Decrease cash balance of account
- iv. Decrease cashier's balance
- v. Decrease bank's balance
- vi. Issue receipt to customer

#### 4.7.3 Sequence Diagram

Sequence diagrams are also known as the interaction diagrams, used to depict or display the interaction between users, screens, objects and entities within the system. It provides a sequential map of message passing between objects over time. Frequently, these diagrams are placed under Use Cases in the model to illustrate the use case scenario, how a user interact with the system and what happens internally to get the work done.

The diagram below illustrates the interaction between the client, user (cashier) and the system during the process of deposit transaction.



**Figure 4.5: showing the sequence of interaction during deposit transaction**

#### **4.8 System Design**

The purpose of system design is to answer the question “How will the Information System do what it is supposed to do to obtain a solution to the problem identified?” This phase is a technical design that details system outputs, inputs and user interfaces; it should also specify hardware and software, databases, telecommunications, personnel and procedures, and show how the existing components are related.

#### **4.9 Designing the prototype**

After the analysis of the data collected, the data was then used to determine the design of the system so as to handle the processing of the data while maintaining the business rules and business processes. The system was designed using a prototype so as to access real data files, edit inputs, makes necessary computations and produces real outputs.

#### **4.10 Designing the Loan Subsystem**

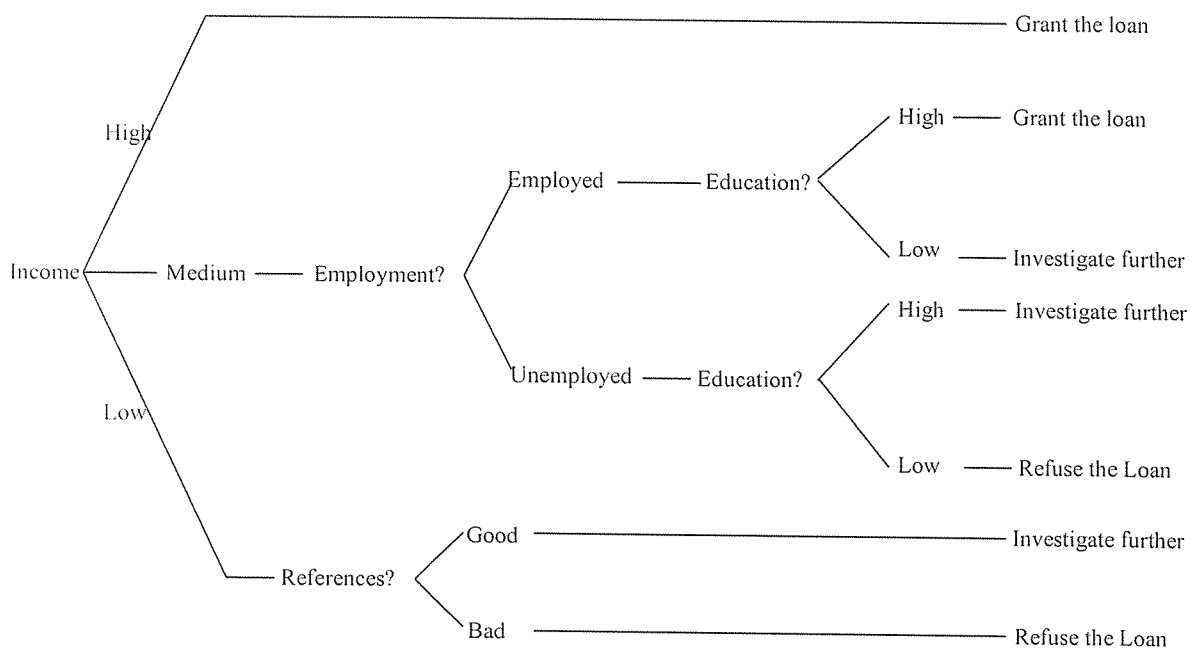
The loan subsystem is an expert system whose goal is to reduce the cost of providing expertise by embedding it in a program that can be copied and distributed inexpensively. From the interviews with the loan manager, it was found out that they concur with the following description of the process. First, categorize the applicant’s income as high, medium or low.

- i. If income is high, grant the loan
- ii. If income is medium, categorize the applicant’s employment and level of education.  
If applicant is employed and has high education, grant the loan. If applicant is employed and has low education or is unemployed but has high education, investigate further. If the applicant is unemployed and has low education – refuse the loan.
- iii. If income is low, categorize the applicant’s reference as Good or Bad. If the references are good, investigate further. If the references are Bad, the loan is refused.

The expert system therefore applies these rules to input data from a customers loan application request form to arrive at one of the three possible recommendations, grant the

loan, refuse the loan or investigate further. The last recommendation means that the loan request should be turned over to human loan manager.

To design the prototype for the this system, the rules are then summarized into a decision tree – a diagram that shows the conditions, outcomes and appropriate actions involved in making a decision.



**Figure 4.6: Conceptual Design of Loan System**

Another constraint on the loan system is that, before a person or client is granted loan, such a client must have an account with the institution. And in that account, there must be a minimum balance that is equal to 30% of the loan amount so as to be able to access the loans.

#### **4.11 Designing the Accounts system**

The accounts system is also a component of the system that can run on its own. It doesn't have many constraints, and it's almost straight forward. The only constraint on the accounts and savings system includes the followings;

- i. The aspect of minimum balance; a user or client is free to perform any kind of transaction on his account, which includes withdrawal, deposit and transfer from one account to another. Deposit is free while withdrawal and transfer are not free, but at a small charge which may be revised at any time without notice.
- ii. Every account is subjected to a strict minimum account balance; this balance can never be drawn. For transactions that results in account balance deductions, if it affects minimum balance then that transaction is not completed.
- iii. To open up an account, you must be introduced by another client who already has an account with the institution.
- iv. Also to open up an account, you must be introduced by either your employer or Local Councilor of your place of residence, using a written letter, bearing a stamp and also you must produce three passport size photographs.

#### **4.12 Physical Design**

The aim of Physical design is to identify what the system will do, describe the functional requirements. It also conceptualizes what the system will do to solve the problems that were identified in analysis. It takes planning the purpose of each system element.

##### **4.12.1 Input Design/Interface Design**

Input into the system is done with the use of forms (Front end) that were designed in the application to interact with the database (Backend). For all the data to be entered into the tables in the database, each table has an interface for data entry into that particular table. So there were as many input interfaces as the tables in the database. The most important of the inputs are the following; the login form, client details form, transactions forms and many others. Some of the screenshots for the form are available below;

#### **4.12.2 Output Design**

The output of this Information System is mainly reports. Different kinds of reports were designed so as to meet all queries that would be generated from the different levels of management so as to answer many questions that could lead to decision making and forecasting.

Most of the reports provide summaries, totals and aggregates of information that is important in decision making process, planning and forecasting. Besides the specified reports stated by the system owners and users, the designers provided for more five unspecified reports to cater for what the users did not think of at the time. Screenshots of some important reports are also included below.

#### **4.12.3 Processing Design**

This involves all the types of calculation, comparison and general data manipulation that would take place during implementation of the system. The kind of processes that takes place during the implementation of the system includes mostly mathematical calculations that take place when a client performs transactions. Depending on the type of the transaction, the result is either an increase or a decrease in the final account balance. If the transaction is deposit, then the account balance will be incremented and if its withdrawal then the account balance will be deducted.

Some processes will not be performed depending on the constraints that were set upon them. One such process is that of the transaction withdrawal. If withdrawal amount is greater than the account balance, then the transaction is not performed, and hence that is a comparison process taking place. And general data manipulation is the combination of many operations on the data in the database ranging from addition, subtraction, multiplication and division.

#### **4.12.4 Database Design**

Data gathered from requirements collection phase and analysis phase was then used to create the logical design of the database. The data was either split further in this phase into fields or bundled together to create tables. The relationship in the tables according to the

logical design showed that at least one table is related to another through what is referred to as keys (primary and foreign).

Data in the database will also be able to be updated instantly when a single update is made in one field, this is because of the table relationships that exist between these tables in the database.

#### **4.12.4.1 Relationships between the entities**

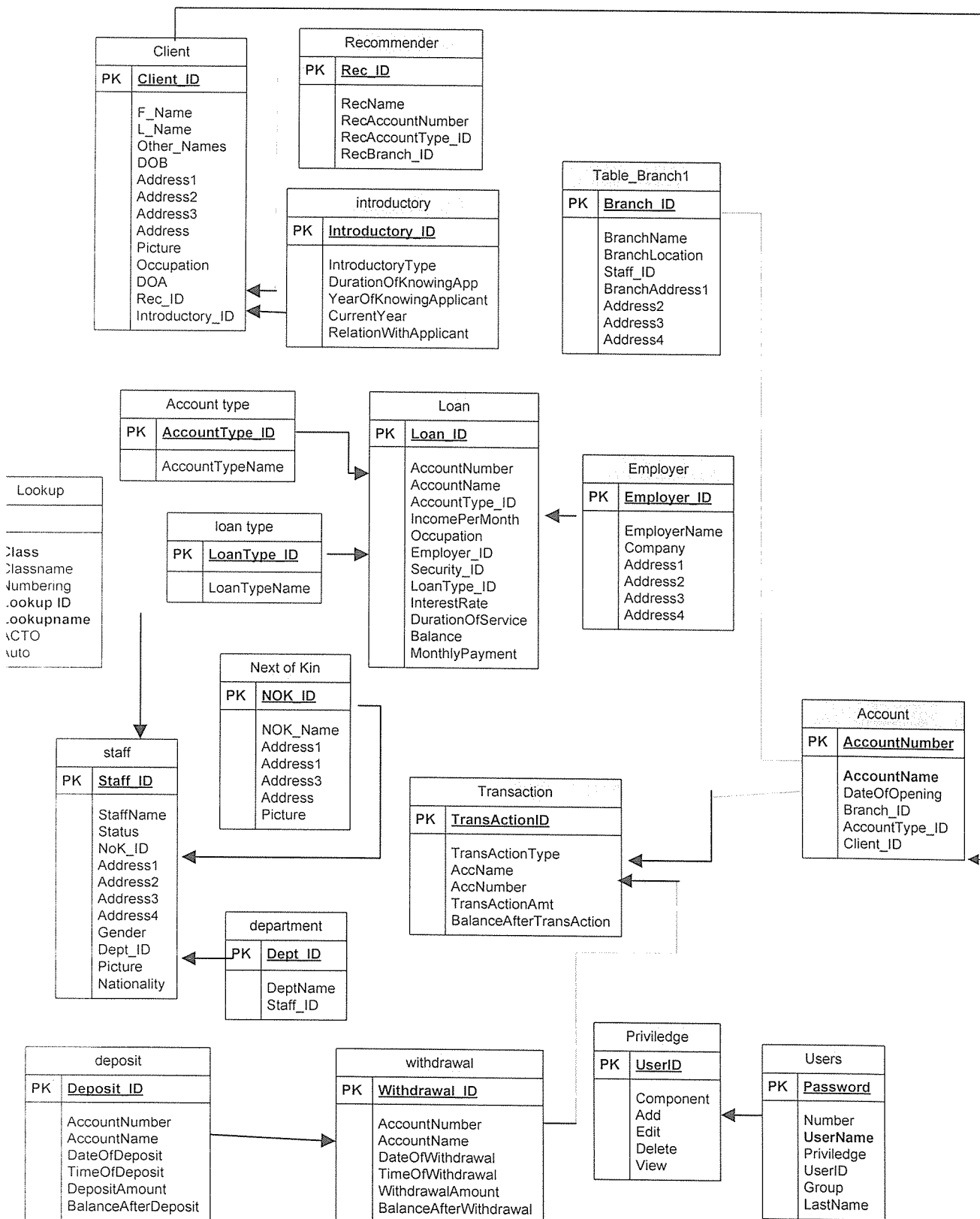


Figure 4.7: Showing the entities and their relationships



In the above diagram, the entities are related to one another in the system through what is referred to as a Primary key (PK). This is to uniquely identify one entity from another. A key that appears on one table as primary key and appears on another table is referred to as foreign key and that is what creates the relationship between the entities.

#### 4.12.5 Network Design

Since the system will implemented on a network, it required to be designed before the system can finally be put to use. This system is a client server type of system whereby the database sits on a server in the server room and users are connected to it through client machines as they requests for services and get response to their requests. This is purely done over the network, that's why it's important to design it before putting the system to use.

Unfortunately, the research did not cover the network design but recommended the design and implementation of the network so as to enable the implementation of the Information System soon after design is complete.

The users are able to interact with the backend through an application designed in Visual basic.Net so as to process requests and send data to the database that is on a server. Many users are able to connect to the same database or table in the database because of concurrent nature of Database Management Systems.

Each client on the network will be uniquely identified by their own usernames and passwords to allow them login to the system and are able to use system resources.

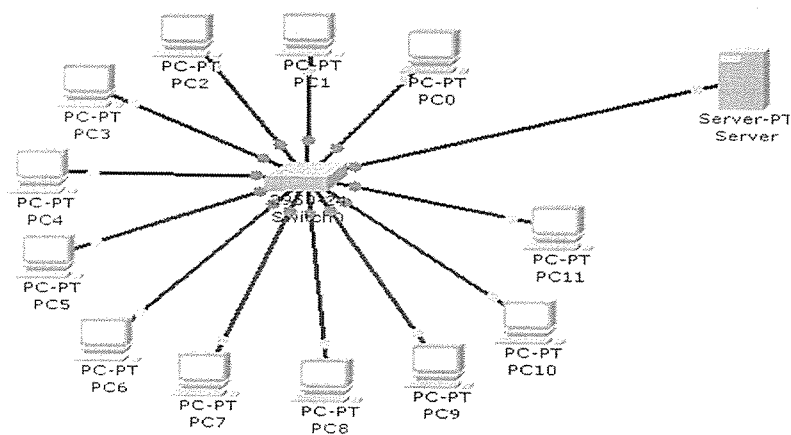


Figure 4.8 The network design

#### 4.12.6 Controls and Security Design

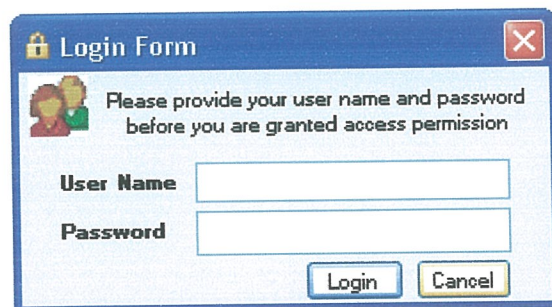
Security to the system is provided by means of authentication and authorization. Authentication is provided by the windows authentication and the application authentication, where you are prompted for a username and password for valid users.

To be a valid user, you must be created on the list of users in the users table in the database. Once created as a user, privileges are then provided to authorize you to perform certain activities and may not perform other. Activities that may be performed on the database include the following

- i. Adding/inserting data
- ii. Deleting data
- iii. Editing/Modifying/changing data
- iv. Viewing data

Therefore, to protect data and information through authorization, the least privilege of view or information hiding or not accessing information and data is granted to a user who may not require editing the data.

Data in the database is therefore protected from threats of accidental or intentional modification and or destruction or unauthorized disclosure.



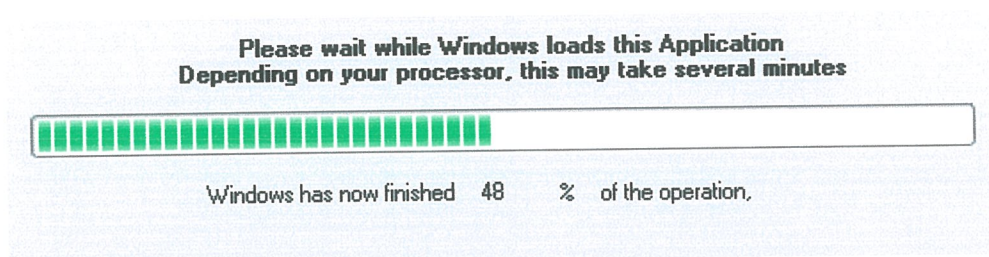
**Figure 4.9: Screenshot of the login form**

The above is a login form that loads first when the application is started. A user who is authorized is expected to provide the username and password click the button login. If the username and password is correct, access is granted to that user according to the privilege so as to be able to only perform the activities assigned to him which includes adding, modifying, viewing, and deleting.



**Figure 4.10: a representation of the splash screen**

After a successful login, the login form disappears and a splash screen shows up with some information such as name of the organization, for which it was developed, version of the application, and name and address of the developers and copyright information.



**Figure 4.11: The progress bar after the login is successful**

The above figure is a progress bar that loads after the splash screen has unloaded. The progress bar shows the extent to which windows has completed loading the application

**Client Details**

**Country Side Microfinance Ltd.**

8

Picture

Client ID: 000008

First Name: Steven

Last Name: Kagumaho

Other Names:

Date Of Birth: Monday , September 06, 1

Occupation: Student

Recommender ID: 7

Introducer ID: 6

Date Of Appt: Thursday , Septembe

**Address**

Residence: Gulu

Postal:

Telephone: 0782929774

E-mail:

First Last Next Previous

Add New Save Delete Cancel

Update Load Close Cancel

**Figure 4.12: The clients' details form**

The clients detail form is used to capture clients' details such as names, address, contact, date of birth, occupation, date of application for an account, and many others. This same form can also be used to navigate through list/rows of clients in the database, add new clients and delete existing clients depending on the circumstances prevailing.



Detail Grid								
st ID	First Name	Last Name	DOB	Residential	Telephone	Occupation	Rec ID	Introductory_ID
	Steven	Kagumaho	9/6/1982	Gulu	0782929774	Student	7	6
	Stuart	Nahamya	3/15/1986	Bukwa	0712555660	Student	8	7
	Racheal	Aijuka	12/23/1990	Lecture	0712577468	Lecture	9	8
	Hariet	Nabweteme	9/12/1980	Lukuli	0714979780	Typist	10	9
	Julius	Duma	7/11/1972	Najja	0775656820	Student	11	10
	Hellen	Tusigwire	9/9/1970	Kiwempe	0752565840	Baker	12	11
	Sarah	Okello	6/6/1982	Arua	0784695231	Enginear	13	12
	Simon	Zzakwoi	5/4/2008	Abua	072045896	Hawer	14	13
	Slyvia	Kiwanuka	2/12/1972	Mulago	0772568941	Hairdresses	15	14
	Hassan	Mugiwa	5/13/1980	Kabaragala	0772194000	Investor	16	15
	Saphina	Akello	3/7/1986	Karamoja	0782654892	Phoneattendant	17	16
	Rose	Kaisiki	3/12/1985	Kasese	0782977382	Businesslady	18	17
	James	Ruyanga	6/4/1890	Abuya	0774562133	Banker	19	18
	Ronald	Angume	4/13/1987	Ntugamo	0772904658	Techian	20	19
	Rehema	Namugerwa	8/17/1986	Kawempe	0775804659	Student	21	20
	Micheal	Mutebi	11/25/1970	Bombo	0392584971	Baker	22	21
	Griphine	Kibuka	5/25/1960	kisasi	03985647891	hawker	23	22
	Apollo	Kisa	12/30/1980	Mbarara	0753646450	Shambaboy	24	23
	Peter	Yiga	8/8/1950	Hoima	076584620	Student	25	24
	Patrick	Sserunjogi	8/31/1890	Nansana	0782542990	Plumber	26	25
	Provia	Kanani	9/11/1976	Kaguri	0712548921	Hairdresses	27	26
	Prossy	Aine	1/17/1780	kasese	0782569841	Stdent	28	27
	Paul	Katantazi	12/6/1976	Lugazi	0752468945	Stdent	29	28
	Peninnah	Nabacwa	9/7/1962	Nyamayerije	075684921	Nurse	30	29
	Patience	Auma	8/5/1876	Kapiripiti	03925684781	Phamasist	31	30
	Happy	Kanunu	5/1/1890	Lugazi	0712587895	Pastor	32	31
	Osbert	Kahunde	4/5/1987	Nabutiti	07824569852	Chef	33	32
	Charles	Omagori	2/12/1978	Ggaba	0782456897	Secretary	34	33

**Figure 4.13: Screenshot of the clients details in a grid**

#### 4.12.6.1 Disaster Recovery plan

Disaster recovery is the process, policies and procedures of restoring operations critical to the resumption of business, including regaining access to data (records, hardware, software, etc.), communications (incoming, outgoing, fax, etc.), workspace, and other business processes after a natural or human-induced disaster.

To increase the opportunity for a successful recovery of valuable records, a well-established and thoroughly tested disaster recovery plan was developed. This task required the cooperation of a well-organized committee led by an experienced chairperson.

A disaster recovery plan (DRP) should also include plans for coping with the unexpected or sudden loss of communications and/or key personnel, although these are not covered in this

project, the focus of which is data protection. Disaster recovery planning is part of a larger process known as business continuity planning (BCP).

Disaster recovery plan was built by identifying all the possible risks and their impacts that could on the system. Then the risks and impacts is documented and then costed. Such threats may be like virus attacks, accidental data deletion, or natural hazards like storm or fire. Each threat is categorized into possibility and impact and prioritized.

And business continuity consists of activities that would make business processes to run in case a disaster has occurred. These include plans such as setting a backup power supply and standby generator. Setting up a backup of the data in another location such that in case there is failure in the main location, the data is somewhere safe and in position to start an operation from where the disaster occurred with minimal loss of data.

#### 4.13 Logical Design

This is best explained by table mappings, it is how the system components are interrelated in order to work together so as to achieve the business processes while maintaining the business rules. It displayed the actual derivative of the Entity Relational model into what is termed as the Relational Model (RM) that defines the physical data files as represented in the constructs or the relational database schema as shown below

##### The Client's Details

**Client**(Client\_ID, F\_Name, L\_Name, O\_Names, DOB, Addresses, Picture, Occupation, DOA, Rec\_ID, Introductory\_ID)

**Account**(AccountNumber, AccountName, DateOfOpening, AccountType\_ID, Branch\_ID, Client\_ID).

**Transaction**(Transaction\_ID, TransactionType, AccountNumber, AccountName, TransactionAmount, DateOfTransaction, BalanceAfterTransaction)

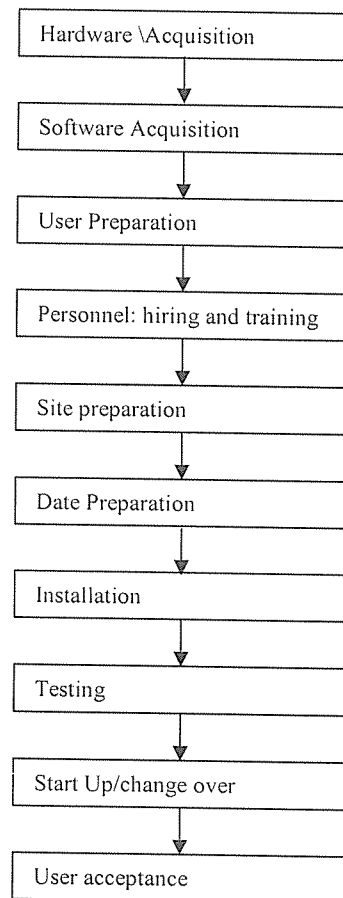
**Loan**(Loan\_ID, AccountNumber, AccountName, AccountType\_ID, IncomePerMonth, Occupation, Employer\_ID, Security\_ID, LoanType\_ID, InterestRate, DurationOfService, DOR, Balance, MonthlyPayment).

## CHAPTER FIVE

### SYSTEM IMPLEMENTATION

#### 5.0 Introduction

After the Information system has been designed, a number of tasks must be completed before the system is installed and ready to operate. This process is called Systems Implementation and this chapter therefore discusses all the activities that are involved in the implementation of the program which includes hardware and software acquisition, user preparation, personnel (hiring or training), site preparation, installation, testing, start-up (Change-over mechanism) and user acceptance, in that order, as shown below.



**Figure 5.1: System Implementation**

Source: Stair and Reynolds, Principles of Information Systems



### **5.1 Hardware acquisition**

To obtain components needed for an Information System, Systems Implementation may require purchasing, leasing or renting hardware and other resources. The following are the identified hardware that is required for the Information System.

Server

Client machines

Network cables

RJ45 connectors

Trunks

Network interface cards

Power backup

Storage media, magnetic tapes

### **5.2 Software acquisition**

For the above hardware, the software can be purchased to run the hardware and they include the following;

Network software such as Linux, windows server

Windows operating system

Programming language, Visual basic.Net

Database Management System, SQL Server 2005

Network Antivirus software, McAfee

### **5.3 User preparation**

This is the process of making managers, decision makers, employees and other users and stakeholders ready for the new system. This is to be done through trainings to make sure they use the information system correctly, efficiently and effectively. User training also includes active participation, marketing, training, documentation and support. Top management support in ensuring that sufficient time and resources are allocated to user preparation is absolutely essential for a successful system start up.

Informing and preparing users for a new system can be done in a variety of ways. Beginning with user participation in system development

#### **5.4 Choice of Programming Language**

The coding of this program was done using Visual Basic.Net. This program was chosen because

#### **5.5 Workability of program**

The working of this program depends on the working of the different modules making up the program. These modules were developed separately and independently of each other but later integrated so as to interact and support each other. The modules make up the components and the components makes up the program. There are two major components that make up this program and in each component there are many modules.

##### **5.5.1 Program Components**

As mentioned before, the program consists of two major components and each component has got many modules so as to be able to function properly in order to satisfy user requirements. The two components are the Savings and the Loan/Credit Component that were independently developed and each has many different modules that were independently developed but integrated so as to function together in one program.

##### **5.5.1.1 The Savings System**

This component is an independently developed one but integrated with the loan component so as to interact together in order to satisfy users requirements and also to achieve its design goals and objectives and fulfils business rules and business processes. The Savings System (Component) has the following modules that work together to fulfill the design goals and objectives of the program.

Clients personal details, savings accounts details, Transaction details (withdrawal and deposit)

#### **5.5.1.2 The Loan/Credit System**

The loan/credit system was also developed independently of the savings system but just integrated together so as to interact and fulfill their design goals and objectives.

### **5.6 Program Testing**

After the programming was completed, then it has to be tested for correctness and efficiency. The program was tested module by module i.e. the savings module was tested separately and the loan module was tested separately and then they were integrated into one unit and then tested and a system.

#### **5.6.1 Sample Test Data**

The sample test data included data from the forms that the clients fill while applying for an account and for loan. This includes the loan amount, interest rates, monthly payment payment period and so on.

### **5.7 Site Preparation**

This is the process of preparing the actual location of the new system. For Country Side Microfinance, being a small company, this process involved simply rearranging furniture because there were already air conditioners in place and wiring/networking was not part of this research, and so it was just recommended that they should do it before the system is implemented. There was no renovation but additional furniture was purchased. There was also additional power circuit and cabling was done.

### **5.8 Data Presentation**

Because this system was to computerize, all manual files must therefore be converted to computer files. All data must be placed in permanent storage devices. Data entry operators were employed to do the conversion of manual data into computer data. The computerized database system was then used to maintain and update these computer files.

## **5.9 System Installation**

This is the process of physically placing the computer equipment on the site and making it operational. The system installation included hardware setup, software installation and the application installation as follows;

### **5.9.1 Hardware Setup**

This included setting up the computers in their positions, and locations and the server in the secured server room so as to offer protection and security to the server. And laying up the trunk where network cables are to be passed from room to room and from the server to the switch and to all the client computers so as to offer communication and exchange of data and information. It also included placing and connecting all the Uninterruptible Power supply to the computers and placing and connecting the back up battery to the power source.

### **5.9.2 Software Installation**

The software installation follows hardware setup. And the software installation for this Information System includes; the windows operating systems on all the client computers, such as windows XP, installation of the Network Operating System on the Server, such as windows Server 2003, Installation of the application (the Microfinance Savings and Credit System) onto the various client computers, installation of the database onto the server

## **5.10 Change over Method**

The system change over begins with the final tested Information system, and when it is finished, the system is fully operational. Various change over approaches are available and they include the following;

### **Direct Conversion/Plunge/Direct Cutover**

This involves stopping the old system and starting the new system on a given date. This is the least desirable approach because of the potential problems and errors when the old system is completely shut off and the new system turned on at the same instant.

### **Phase in /piecemeal approach**

This is the most popular technique. In this approach, components of the new system are slowly phased in while components of the old one are slowly phased out. When every one is confident that the new system is performing as expected, that's when the old system is completely phased out. This is the method that will be used to change over to the new system.

## CHAPTER SIX

### SUMMARY, CONCLUSION AND RECOMMENDATION

#### 6.0 Introduction

This chapter focuses on the how the research project is brought to a conclusion and provides solutions and recommends way forward to the problems that were identified.

#### 6.1 Summary

Interest in microfinance has soared in the recent decade and the instrument is now seen as one of the most promising tools to tackle poverty in the developing world. The fascination with microfinance derives from the fact that the provision of financial services can contribute to poverty reduction and pass the test of sustainability at the same time. However, microfinance has sometimes disappointed its supporters. Only few of the hundreds of microfinance programs inaugurated in the last decade have proven their sustainability. A growing body of evidence indicates that the instrument does not meet the high expectations initially placed on it in terms of client impact. Few micro enterprises experience sustained growth, while a majority grows only a little or maintain their operations at a constant level.

In summary therefore, this research was to investigate problems in Country Side Microfinance Institute and find ways in which those problems may be addressed using Information Systems. The project went on well, and indeed problems were identified and it was necessary to design an Information System to address these problems.

Currently, the design of the information system is not yet complete due to time factors and some other factors like power interruption and load shedding, the project is underway but so far, the following are complete;

- i. The research was carried out during the study using interviews, questionnaires, observation and related documents. Requirements were gathered especially from users and existing documents so as to determine input and output requirements.
- ii. The database design using SQL Server 2005, tables were designed and relationships were created, and queries were as well created in order to handle user requests and queries that are asked into the database in order to retrieve information.

- iii. Interfaces design were also completed and a few of the codes already written. But most of the codes are still to be written, so as to be able to interact with the database and post and retrieve data and information to and from the database.
- iv. Testing a few of the already coded units so as to be sure it is really functioning properly and efficiently.

## 6.2 Conclusion

Much as evidence shows that microfinance interventions have the capacity to reduce poverty, contribute to food security, and change social relations for the better. The under- and unemployed are increasingly forced to engage in a variety of economic activities to generate sufficient income. With men as the traditional income providers finding it ever more difficult to support their families, an increasing number of urban and peri-urban women enter the labor market to engage in various sectors ranging predominantly from petty trading to service provision and in some cases even manufacturing activities on a significant scale.

In conclusion therefore, it is important to develop information systems to solve the microfinance savings and loan scheme. This is because, these problems directly affect the community.

### 6.2.1 Challenges

The major challenges in this project includes but not limited to the following;

- i. Learning a new programming language that was not used by the researcher before. That is Visual Basic.NET. it's the first time for the researcher to use that language for the first time
- ii. Completely understanding user requirements and use then so as to be able to satisfy them in the project application. This is because even users themselves do not completely understand their own requirements.
- iii. Balancing between the project and other duties. This is the main reason the research took such a long time. The research was an additional work that the researcher was carrying out and therefore it added more work load onto an already big workload hence too demanding.

### 6.3 Recommendation

After the research, the researcher was able to make the following recommendations;

- i. Future researches should also be done in the same areas probably to advance on the very research.
- ii. To add more advance systems as the system evolves and as the data grows big in the information system.

The following recommendations were therefore made as per the research and analysis of the problems. If the following recommendations are made then the microfinance in Uganda, Would Be of Great Benefit to The People and to the Country

- i. Microfinance institutions should revise their method on approach instead of aiming at profiteering, they should focus more on solving people's problems and less on maximizing profits.
- ii. They should also revise the amount of money of money/loan extended to clients. Most of the time the amount is so restricted such that it s always not enough to get people into profitable and bigger business.
- iii. Microfinance may also need to consider training clients on how to handle and manage businesses. In other words, they should provide some business skills training to clients who take loan so as to adventure into business and any other income generating activity. This is because most of them don't have any business and therefore there is a higher degree of mishandling the business and hence having higher chances of failing to pay back the loan or to default.
- iv. More NGOs should be encouraged to adopt microfinance programs. NGOs should operate as banks if they are to help the more poor people. This puts NGOs in a better position to mobilize savings from the public legally and help provide reassurance to local and global markets.
- v. Supporting market and strategic studies. This third level of intervention should strengthen the product innovation as well as the framework support intervention level.
- vi. Support and promote cooperation and collaboration efforts of the microfinance industry.

However, much as the above recommendations may be implemented, microfinance is still looked at as an aspect that will still take sometimes to have impact over peoples lives because, fewer results have been seen in the microfinance in terms of poverty eradication,



which is the main reason why microfinance was started. Even after a whole ministry was set up to handle the important microfinance, there has been argument that the appointment of the minister may not yield much output or impact because he is a person who has no credible background in micro financing.

Microfinance has failed in Uganda because the people and organizations or institutions involved in this kind of business are obsessed with profit making instead of solving people's problems, such that if they were really want to help the poor, they would need to focus more on solving people's problems and less on profit making. The following recommendations were then made in order for the microfinance projects to have impact.

## REFERENCES

- O'Brien A. James, *Introduction to information Systems*, 11<sup>th</sup> Edition, New York, Irwin/McGraw-Hill, 2003
- Carlton *et al* *Microfinance in Uganda*, L and R Social Research, December 2001.
- Ralph M. Stair, George W. Reynolds, *Principles of Information Systems, A Managerial approach*, 1989, 3<sup>rd</sup> Edition.
- Jeffrey L. Whitten, Lonnie D. Bentley, Kevin C. Dittman, *Systems Analysis and Design Methods*, 2000, 5<sup>th</sup> Edition, McGraw-Hill, New York
- Brian L. Williams, Stacey C. Sawyer, Sarah E. Hutchinson, *Using Information Technology, A practical introduction to computers and communications*
- Stephen Hagg, Maeve Cummings, Donald J. McCubbrey, *Management Information System for the Information Age*, 2002, 3<sup>rd</sup> Edition
- Gerald V. Post, David L. Anderson, *Management Information System, Solving Business problems with Information Technology*, 2003, 3<sup>rd</sup> Edition.
- James A. O'Brien, *Management Information System, Managing Information Technology in the business Enterprise*, 6<sup>th</sup> Edition.
- Ronald Thompson, William Cats-Baril. *Information Technology and Management*, 2<sup>nd</sup> Edition, Irwin/McGraw, 2003
- National Technical Committee Coordination of Microfinancing Initiative (1998): Draft Report on Coordination of Micro Financing Initiative“, Ministry of Finance, Planning and Economic Development
- Wright, G.A.N., et al (1999): „*Vulnerability, Risks, Assets and Empowerment – The Impact of Microfinance on Poverty Alleviation*“, MicroSave-Africa & Uganda Women's Finance Trust, Kampala
- Valenzuela. L.; Young, R. (1999): “*Consultation on Regulation and Supervision of Microfinance: A Workshop Report*“, USAID/MBP
- Rutherford, S. (1999): „*Savings and the Poor the Methods, use and impact of savings by the poor of East Africa*“, MicroSave-Africa, Kampala
- www.villagesavings.com, 20<sup>th</sup> – May – 2008.
- www.planetrating.com, 15<sup>th</sup> – June – 2008.

## APPENDIX A

### Interview Questions

#### SECTION A - Management and Staff

1. Do you find any problem with the current system?

☐

Yes

☐

No

If yes, please elaborate in brief, giving the nature of the problem

.....

.....

.....

.....

2. What step has management taken to address the problems identified in 1 above?

.....

.....

3. Have you computerized your systems and operations?

☐

Yes

☐

No

4. Do you think computerizing your systems and operations is a solution to the systems problems?

☐

Yes

☐

No

5. Have you ever used any computer application software before?

☐

Yes

☐

No

6. Do you have a Business/Systems Analyst?

☐

Yes

☐

No

☐☐

### Section B – Clients

1. Are you satisfied with the way in which the operations are carried out in the organization?

☐

Yes

☐

No

2. If No, what would you like management to change about the way they carry out their operation?

.....

.....

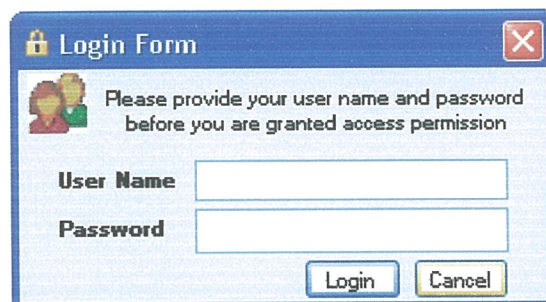
.....

## APPENDIX B

The screenshot of splash screen when the application is started



Screenshot of the login form

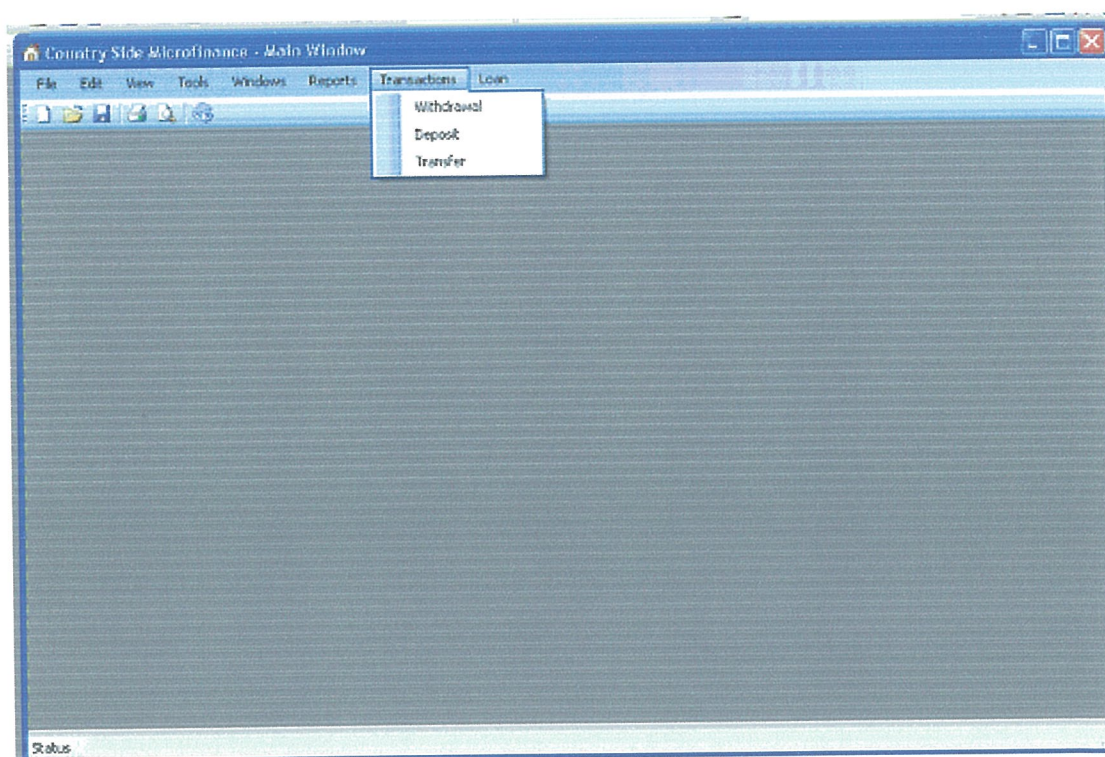
A Windows-style dialog box titled "Login Form" with a blue header bar and a close button (X) in the top right corner. Inside the dialog, there is a small icon of two people and a message: "Please provide your user name and password before you are granted access permission". Below the message are two text input fields: "User Name" and "Password". At the bottom right of the dialog are two buttons: "Login" and "Cancel".

The progress bar after the login is successful

Please wait while Windows loads this Application  
Depending on your processor, this may take several minutes



Windows has now finished 48 % of the operation.



**The clients' details form**

**Client Details**

## Country Side Microfinance Ltd.

8      Picture

Client ID: 000008

First Name: Steven

Last Name: Kagumaho

Other Names:

Date Of Birth: Monday , September 06, 1

Occupation: Student

Recommender ID: 7

Introducer ID: 6

Date Of Appnt: Thursday , Septembe

**Address**

Residence: Gulu

Postal:

Telephone: 0782929774

E-mail:

First   Last   Next   Previous

Add New   Save   Delete   Cancel

Update   Load   Close   Cancel



Detail Grid								
ID	First Name	Last Name	DOB	Residential	Telephone	Occupation	Rec ID	Introductory_ID
	Steven	Kagumaho	9/6/1982	Gulu	0782929774	Student	7	6
	Stuart	Nahanya	3/15/1986	Bukwa	0712555660	Student	8	7
	Racheal	Aijuka	12/23/1990	Lecture	0712577468	Lecture	9	8
	Hariet	Nabweteme	9/12/1980	Lukuli	0714979780	Typist	10	9
	Julius	Ouma	7/11/1972	Najja	0775656820	Student	11	10
	Hellen	Tusigwire	9/9/1970	Kiwempe	0752565840	Baker	12	11
	Sarah	Okello	6/6/1982	Arua	0784695231	Engineer	13	12
	Simon	Zzakwoi	5/4/2008	Abua	0720456896	Hawer	14	13
	Sylvia	Kiwanuka	2/12/1972	Mulago	0772568941	Hairdresses	15	14
	Hassan	Mugiwa	5/13/1980	Kabaragala	0772194000	Investor	16	15
	Saphina	Akello	3/7/1986	Karamoja	0782654892	Phoneattendant	17	16
	Rose	Kaisiki	3/12/1985	Kasese	0782977382	Businesslady	18	17
	James	Ruyanga	6/4/1890	Abuya	0774562133	Banker	19	18
	Ronald	Angume	4/13/1987	Ntugamo	0772904658	Techian	20	19
	Rehema	Namugerwa	8/17/1986	Kawempe	0775804659	Student	21	20
	Micheal	Mutebi	11/25/1970	Bombo	0392584971	Baker	22	21
	Griphine	Kibuka	5/25/1960	kisasi	03985647891	hawker	23	22
	Apollo	Kisa	12/30/1980	Mbarara	0753646450	Shambaboy	24	23
	Peter	Yiiga	8/8/1950	Hoima	076584620	Student	25	24
	Patrick	Sserunjogi	8/31/1890	Nansana	0782542990	Plumber	26	25
	Provia	Kanani	9/11/1976	Kaguri	0712548921	Hairdresses	27	26
	Prossy	Aine	1/17/1780	kasese	0782569841	Stdent	28	27
	Paul	Katantazi	12/6/1976	Lugazi	0752468945	Stdent	29	28
	Peninnah	Nabacwa	9/7/1962	Nyamanyenje	075684921	Nurse	30	29
	Patience	Auma	8/5/1876	Kapiripiti	03925684781	Phamasist	31	30
	Happy	Kanunu	5/1/1890	Lugazi	0712587895	Pastor	32	31
	Osbert	Kahunde	4/5/1987	Nabutiti	07824569852	Chef	33	32
	Charles	Omagori	2/12/1978	Ggeba	0782456897	Secretary	34	33

Clear

HG 1709  
DT 144  
2008

