

COMPUTERISATION OF MORTGAGE LENDING:

CASE STUDY OF FEDERAL MORTGAGE FINANCE

LIMITED, MINNA BRANCH.

BY

Ejikeme Goodman Okorafo

(PGD/MCS/101/93/94)

DECEMBER, 1995.

**COMPUTERISATION OF MORTGAGE LENDING:
CASE STUDY OF FEDERAL MORTGAGE FINANCE
LIMITED, MINNA BRANCH.**

BY

Ejikeme Goodman Okorafa

(PGD/MCS/101/93/94)

A Project submitted to the Department of Mathematics/Computer Science, Federal University of Technology, Minna - Nigeria in partial fulfilment for the Award of Post-Graduate Diploma in Computer Science.

DECEMBER, 1995.

CERTIFICATION

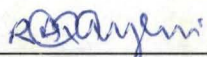
This is to certify that I have supervised, read and approved this project report carried out by Ejikeme Goodman Okorafo, and have found it adequate both in scope and quality in partial fulfilment of the requirements for award of Post_graduate Diploma in Computer Science.

PROJECT SUPERVISOR
(DR. S.A REJU)

DATE

H. O. D.
(DR. K. R. ADEGBOYE)

DATE



EXTERNAL EXAMINAR

26/2/97

DATE

ACKNOWLEDGEMENT

DEDICATION

To my Daughter - Sarah.

Finally, special mention must be made to my spouse for her ever ready help and relentless care, my children, Precious, Jerry and Sarah for their co-operation.

It must, however, be put in record that all the credits and errors associated with this report are my claim.

ABSTRACT

For any organisation the most important prerequisite is an efficient management information system. Mortgage companies are not exceptions. Every result oriented management will fall for systems that provides information in cheap, fast and less tasking manner. The manual ways of obtaining, recording, storing and retrieving of information makes the services of most mortgage institutions lacklustre, especially, in meeting customers' information demands.

The computer era has provided a better way of storing, manipulation and retrieval of data. This study, therefore, has particularly undertaken study of Federal Mortgage Finance Limited, Minna Branch so as to provide it with efficient management information system.

TABLE OF CONTENTS

Title Page	i
Dedication	ii
Acknowledgement	iii
Abstract	vi
Contents	vii
List of Illustrations.	ix

CHAPTER ONE

Introduction to Mortgage Lending	1
1:1 Introduction	1
1:2 History of Mortgage Lending	2
1:3 Federal Mortgage Finance Limited	3
1:4 Computerisation of some company transactions	8
1:5 Purpose of the Study	9
1:6 Scope and Limitations	10
1:7 The Importance of the study	10
1:8 Research Methodology.	11

CHAPTER TWO

A case study of FMFL, Minna Branch	13
2:1 Location/Tenancy	13
2:2 The Organisational chart/functions	14
2:3 Mortgage Operations	16

CHAPTER THREE

System Design	26
3:1 Objectives	26
3:2 Elements of Design	27
3:3 Data Modelling/Normalisation	29
3:4 Design of Input	33
3:5 Design of Control	34
3:6 Design Format	36

CHAPTER FOUR

System Implementation And Operations	37
4:1 Training	37
4:2 Conversion	39
4:3 Post Implementation Review	42
4:4 Cost and Benefits	46
4:5 Maintenance	47
4:6 How the system operates.	48

CHAPTER FIVE

Some Analysis, Recommendations And Conclusion	60
5:1 Some Analyses	60
5:2 Recommendations	63
5:3 Conclusion.	65
DEFINITION OF TERMS	66
BIBLIOGRAPHY	67
APPENDIX.	68

LIST OF ILLUSTRATIONS

- Fig. 1:1 Organizational structure
- Fig. 2:1 Organizational Chart of FMF
 Limited, Minna Branch
- Fig. 3:1 Mortgage Management Information
 System
- Fig. 4:1 Introduction Screen
- Fig. 4:2 Menu Screen
- Fig. 4:3 Ledger Screen
- Fig. 4:4 Customer's Record Screen
- Fig. 4:5 Guarantor's Record Screen
- Fig. 4:6 View Screen
- Fig. 4:7 Transaction Screen 1
- Fig. 4:8 Transaction Screen 2
- Fig. 4:9 Report Screen 1
- Fig. 4:10 Report Screen 2
- Fig. 4:11 Amendment Sub-Menu
- Fig. 4:12 Calculation of Interest And
 Age of Arrears
- Fig. 4:13 Amendments of Records
- Fig. 4:14 View Screen

CHAPTER ONE

INTRODUCTION TO MORTGAGE LENDING

1.1 INTRODUCTION:

Mortgage is an ancient word derived from the practice whereby the borrower conveyed the landed property to the lender with a provision for a reconveyance if the loan was repaid as agreed. If the loan was not repaid as agreed, the property would become a "dead pledge" mortgage and remain the permanent property of the lender. This ancient practice of dead pledge is no more applicable in modern business principles but the term has remain and the concept of pledge for a loan has become a very permanent feature of lending transaction today.

In modern practice a mortgage is created when there is an agreement to treat property as security for a dept on the understanding that the property may be sold by the lender (if the borrower fails to repay the debt as and when due) to recover the debt. A body of statute law has developed with time to provide backing for the mortgage concept; but without prejudice to the general principles that the mortgages is entitled to not more than the debt owing, and the mortgagor is obliged to pay not more than is owed. Hence where the value of the property is an access of the debt, the mortgagor is entitled to the

differences, should the property be sold to recover the debt. In any case, the legal maxim of equity of redemption remains with us and the mortgagor is allowed every opportunity to redeem the loan; the mortgagee's interest rests with the repayment of the loan and to the dispossession of the mortgagor of his property. Operationally, especially in Nigeria, mortgage lending is a specialised type of credit transaction with land or other form of property/asset as security. "In essence it serves as a catalyst for economic development bridging the gap between the need for, and, supply of capital for investment to accelerate the process of investment and asset formation.

1.2 HISTORY OF MORTGAGE LENDING IN NIGERIA

In Nigeria mortgage lending is as old as the Nigeria history. In every clan and village in Nigeria it has always been an accepted tradition that individuals, or group of individuals - a family or community may wish to pledge their landed property as security so as to secure a loan from, or, service of, another party. The property on pledge will be reverted back to the borrower if he pays back the loan to the lender. Or, else, the lender is entitled to confiscate the property on pledge which now becomes his property permanently. However, in most part of Nigeria, this type of agreement between the

lender and borrower is always open until such a time the borrower is able to redeem his pledge. Sometimes it extends through generations.

The first statutory body charged with mortgage lending in Nigeria is the Nigerian Building Society (NBS). The Nigerian Building Society was established in 1956 as a joint-venture between the Federal and Eastern Nigeria Governments as well as the Colonial Development Corporation to grant social loans.

1.2.1 EMERGENCE OF FEDERAL MORTGAGE BANK

Federal Mortgage Bank was established by decree No. 7 of 1977 to take over the operations of the NBS. The establishment of Federal Mortgage Bank of Nigerian (FMBN) was to spearhead the evolution of a two tier housing finance structure with FMBN as the apex agency and a network of primary mortgage institutions to be operated by private enterprises. For various reasons, the primary network did not emerge. The FMBN was compelled to continue to retail lending operations. On its inception, the bank inherited 11 locations. By 1992, FMBN has a branch network of about 28 all over the Federation. The functions of FMBN include:

- i. The provision of long-term credit facilities to mortgage institutions in the country at such rates and upon such terms as may be determined by the Board in accordance with Government being rates and terms designed to enable the mortgage institutions to grant comparable facilities to Nigerian individuals desiring to acquire houses of their own.
- ii. The encouragement and promotion of the development of mortgage institutions at State and National levels.
- iii. The supervision and control of the activities of mortgage institutions in Nigeria and directives by the Federal Government.
- iv. The provision of long-term credit facilities directly to Nigerian individuals at such rates and upon such terms as may be determined by the board.
- v. The provision at competitive commercial rates of interest, of credit facilities to commercial property developers of offices and other specialised types of buildings.

The Federal Mortgage Bank of Nigeria, until 1989 remained the only specialised institution of housing financing, solely engaged in mortgage lending for housing investment in Nigeria.

1.3 FEDERAL MORTGAGE FINANCE LIMITED

The promogation of the Mortgage Institution Decree 53 of 1989 began a new era of mortgage lending in Nigeria. This decree came up as a response to the institutional inadequacies to meet the demand for housing finance. It provides for the establishment of privately owned primary mortgage institutions such as Building Societies, Housing Corporations, Savings and Loans Associations with a two tier structure having FMBN as apex. A restructuring became necessary in FMBN so as to divest the FMBN of its retail banking and mortgage operations so that it can concentrate on its roles as the nations apex mortgage lending agency. The Federal Mortgage Finance Limited (FMFL) was created to take over other functions. The certificate of incorporation of FMFL was issued on the 31st December, 1993. The company took off in earnest in 1st January, 1994. With its headquarters in Lagos, it has about 28 branches all over the Federation.

1.3.1 STATUTORY FUNCTION OF FMFL

The statutory roles of FMFL include the following:

- i. Ensuring equitable spread of mortgage lending activities all over the country.
- ii. Operating as an efficient and effective mortgage institution and also dictate the level and pace of growth in the industry.

iii. Minimising avoidable and fraudulent investment loses, and ensuring a timely and adequate loan recovery performance, in order to create opportunities for structured expansion in the provision of housing finance.

1.3.2 ORGANISATIONAL STRUCTURE

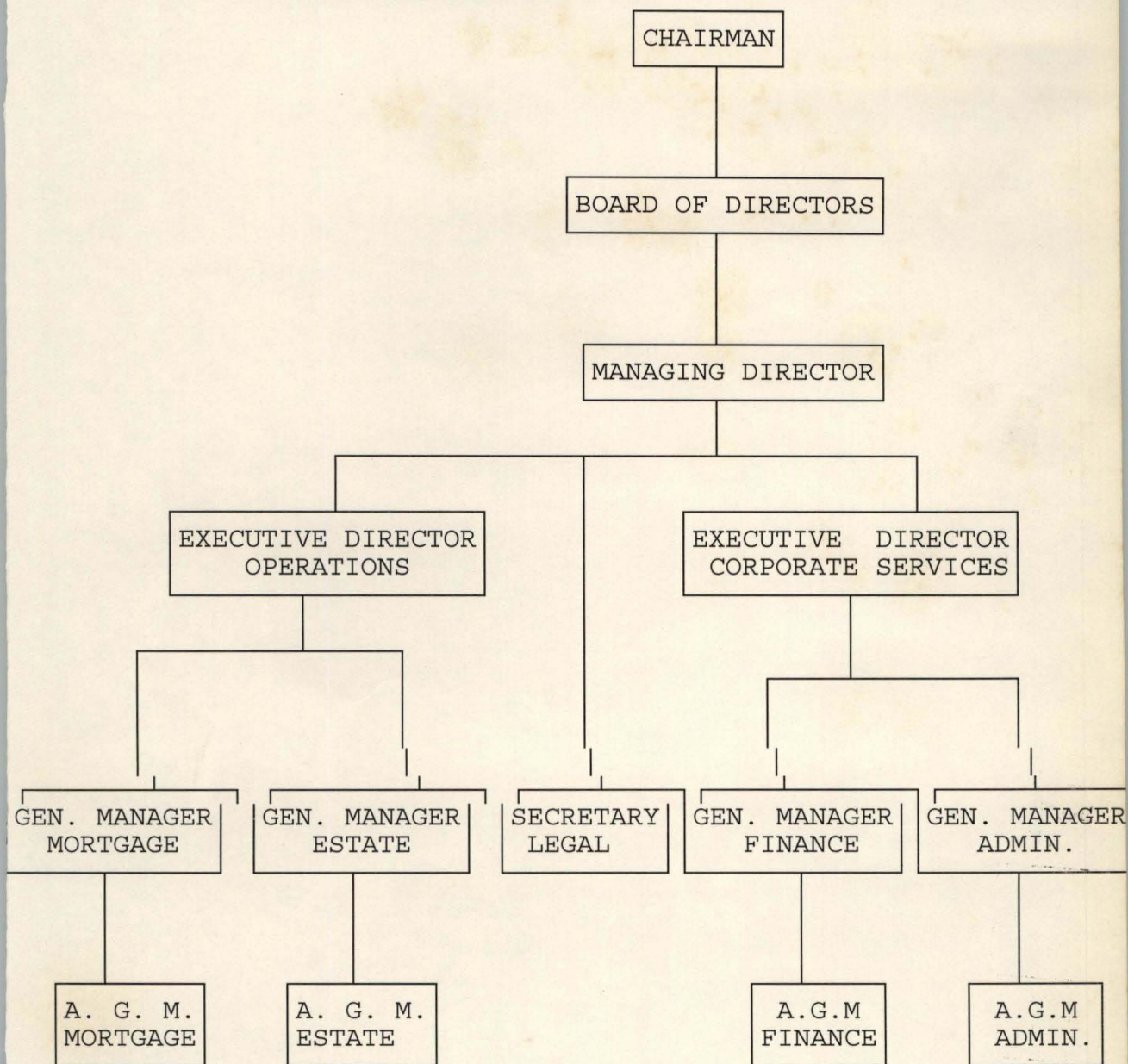


Fig. 1.1

1.3.2.1 The Chairman:

On top of the organisation chart is the Chairman of the board of directors who is saddled with policy matters concerning the company.

1.3.2.2 The Managing Director:

As the Chief Executive of the company he oversees the implementation of company policies and running of the company. He is responsible to the Board.

1.3.2.3 The Executive Directors:

Next in the chart are the two executive directors in-charge of Operations and Corporate Services respectively. Executive Director Operations oversees all the banking and mortgage functions of the company. Under him are the Assistant General Manager Mortgage and Assistant General Manager Estate under whom are the creme of mortgage and estate officers and clerks.

The Executive Director Corporate Services is saddled with the responsibility of overseeing the administrative and financial matters in the company. Under him are The Assistant General Manager Administration and Assistant General Manager Finance with a creme of administrative and finance staff working under them. The Executive

Director Corporation Services is responsible to the Managing Director.

1.3.2.4 The Secretary/Legal:

Usually referred to as the company secretary is responsible to the Managing Director. He oversees legal matters in the company and interprets policy issues to all organs of the company. He has a creme of secretarial staff under him including lawyers and chartered secretaries.

1.3.2.5 The Branch Managers: Are the chief executives at the branch offices and are responsible to the Executive Director Operations. They carry out the real operations in the field and generate reports to the headquarters weekly, monthly and annually as the case may be or on demand.

1.4 COMPUTERISATION OF SOME COMPANY TRANSACTIONS

Computerisation of some aspect of the mortgage operations started with the inception of the Federal Mortgage Bank in 1977. The Federal Mortgage Finance at its inception in 1974 also inherited this level of computerisation at the headquarters only. The computer at the headquarters is only used to store relevant information concerning mortgage lending operation generated at the branch offices.

1.5 PURPOSE OF THE STUDY

The main aim of this study is to computerise the mortgage lending operations of the Federal Mortgage Finance Limited. These can be achieved through the following objectives:

- i. To identify and define clearly the problem needed to be solved.
- ii. To carry out feasibility studies and to look at all possible alternative solutions. This will include the compilation of actual cost and cost-benefit analysis for each alternative solution proposed.
- iii. To carry out a more detailed study to ascertain:
 - a. The range of data types
 - b. Volumes of data that are to be processed, and
 - c. Exceptional conditions and problems associated with present working method.
- iv. To analyze the data collected on the existing system and the objectives of the proposed system so as to come up with full specification of users requirements.
- v. To design the proposed system by working from the system requirements to produce a

system specification. The system specification will be a detailed set of documents which provide details of all features of the system.

- vi. To acquire the needed hardware and write the needed programme.
- vii. To implement the designed system.
- viii. To maintain and review the system from time to time so as to accommodate changes.

1.6 SCOPE AND LIMITATIONS:

The scope of the study is affected by size and time factor as well as financial input. It would have been wonderful to computerise the whole functions of Federal Mortgage Finance Limited which includes, administrative, financial, banking, legal, estate management and mortgage lending. However, due to the time limit available for this study, only one aspect of the company's key operation will be computerised by the end of this study.

This study will cover mortgage lending as it affects mortgage account ledger card, bank reconciliation statement and report generation.

1.7 THE IMPORTANCE OF THE STUDY:

The importance of this study includes:

- i. Design of a model system for computerisation of

mortgage lending operations at the branch offices of Federal Mortgage Finance Limited using Minna Branch as a case study.

- ii. Utilization of the characteristics of a good system in the proposed system which will comprise:
 - a. Simplicity
 - b. Flexibility
 - c. Reliability
 - d. Economical, and
 - e. Acceptability.
- iii. Introduction of efficiency in terms of speed and accuracy in mortgage operations in Federal Mortgage Finance Limited.
- iv. A base for further research in computerisation of the functions of the Federal Mortgage Finance Limited.

1.8 RESEARCH METHODOLOGY:

The method of research will include the following:

- i. Feasibility study
- ii. System investigation and fact finding
- iii. System analysis
- vi. System design
- v. System Implementation and Evaluation.

In (i) and (ii) above direct interviews of the Federal Mortgage Bank Limited staff, personal observation of how the tasks are carried out and review of relevant literature will be applied.

In system design, the input, process, output nomenclature will be strictly be adhered to. In (vi) above, all technical no-how and experience will be pooled together to recommend a computer system and to carry out the following testing:

- a. Code testing
- b. Specification test
- c. Verification test
- d. Validation test, and
- e. Certification test.

CHAPTER TWO

A CASE STUDY OF FEDERAL MORTGAGE FINANCE LIMITED, MINNA BRANCH

The Federal Mortgage Finance Limited (FMFL), Minna Branch is the brain child of the new national housing policy while its effective implementation resulted into reorganisation of the structure of the former Federal Mortgage Bank. This gave rise to the twin companies - the Federal Mortgage Bank and the Federal Mortgage Finance Limited. The latter company started operation on 1st January, 1994.

2.1 LOCATION/TENANCY:

The Federal Mortgage Finance Limited, Minna Branch is located at the Mortgage Building situated along Bosso Road in Minna Town directly opposite the road leading to the government house in Minna. Federal Mortgage Finance Limited is the owner of the building which she shares with her sister company - the Federal Mortgage Bank Minna Branch and other companies like the ABG Cable News Nigerian Limited, and estate management outfit, a legal company and an insurance company. She occupies the right wing of the ground floor of the building.

2.2 THE ORGANISATIONAL CHART/FUNCTIONS

The Federal Mortgage Finance Limited system is made up of components called departments which interact effectively with each other to generate reports based on processed data to meet its mortgage operations goals and aspirations. The departments include:

- i. Banking
- ii. Finance, and
- iii. Mortgage.

ORGANISATION CHART

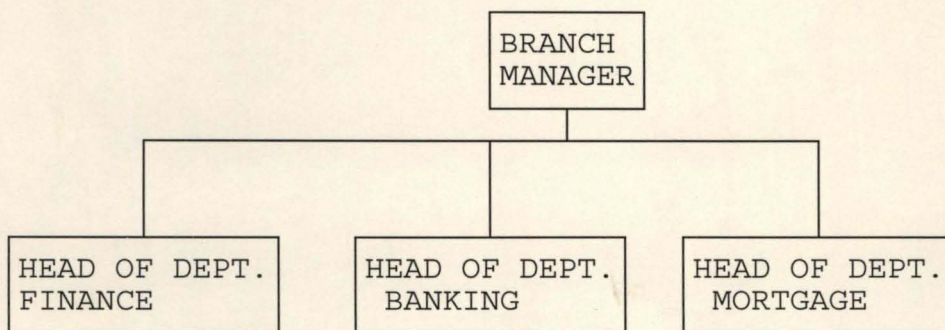


Fig. 2:1

2.2.1 The Branch Manager

The Branch office in Minna is headed by the Branch Manager who is the Chief Executive of the branch. He oversees the functions of the three heads of departments. He presently combines the administrative functions with his office. Such administrative functions as management of human resources as it affects recruitment, promotions,

training and health of staff. The office of the branch manager oversees all correspondence entering or leaving the branch office and keeps track of reports as it affects personnel matters equipments and transaction between the various kinds of files. The branch manager has the final authority in the branch office and is responsible to his superiors in the headquarters in Lagos.

2.2.2 The Finance Department

This department oversees all transactions concerning customers' accounts, personnel accounts, payroll, account receivable, account payable as well as all financial commitments of the company. She is in-charge of budgeting for the branch and validates all spending in the branch. The head of department is responsible to the branch manager and has account clerks working under him.

2.2.3 Banking Department

This department directly deals with members of the public who come to deposit or withdraw money as the case may be. She attends also to bank customers who come to make enquiries concerning their savings or mortgage accounts. The head of department of banking is responsible to the branch manager and has banking clerks working under him.

2.2.4 The Mortgage Department

This is the department that performs the core function of the company. Its main functions includes detail lending, wholesale (corporate) lending, mortgage administration (arrears), keeping and maintenance of mortgage files and generation of mortgage statistics. The head of department of mortgage is responsible to the branch manager and maintains crop of mortgage officers and clerks under him. The mortgage department presently employs the services of an estate surveyor to value the mortgage property and a legal officer to prepare, ascertain ownership, and prepare final conveyance to tittle documents to the mortgage property.

2.3 MORTGAGE OPERATIONS

The most popular operation of Federal Mortgage Finance Limited is the retail lending. Retail lending is the advancement of mortgage loans to individuals on the pledge of their interest in real property to the company. Retail lending forms the main area of focus for this study.

2.3.1 Types of Loans

There are two types of loans namely:

- (i) Social Loans: loans granted in cases where cost of constructions is #100,000.00 or below.
- (ii) Commercial Loans: Loans for those buildings where the cost exceeds #100,000.00.

These loans are secured by a mortgage over land or landed property by individual, savings and loan associations, commercial banks, insurance companies and so on.

2.3.2 Application Procedure for Retail Lending

Prospective mortgagors (borrowers) should be well informed about conditions for mortgage loans by the appropriate officials of the bank, and through information obtained from the company's mortgage brochure. If satisfied, he obtains the application form which he fills and returns to the bank. The applicant must show evidence of maintaining a FMF savings account for a period of at least six months with a minimum balance of #2,500.00. The application form will be returned with the following documents:

- i. Photocopy of title document or certificate of occupancy.
- ii. Original approved building plan which should contain all details of the proposed project including the structural plan.
- iii. Photocopy of pay slip/pay advice (for civil servants) or income tax clearance certificate and tax assessment certificate in case of self employed individuals or traders.
- iv. Letters of consent from the state government.

- v. Passport photography of applicant
- vi. Personal stake show evidence of the applicant's contribution of 20% of the total cost of construction.
- vii. Non-refundable inspection fee of #6,000.00
- viii. Bill of quantities from a licensed quantity surveyor.
- ix. A feasibility study (valuation report) of the property.

When the above conditions are met and application submitted, the applicant is invited for physical interview and FMF begins to process the application based on surveyors reports.

2.3.3 Surveyors Report Contents

The inspection fee must be paid before the surveyor is instructed to inspect the applicant's property. The surveyors report include:

- i. Stage or construction of the property
- ii. Physical surrounding of the property and its locality.
- iii. Cost of completion of property.
- iv. Valuation of the property
- v. Estimated fire insurance of the property
- vi. Sketch drawing of the routes leading to the property for easy reference in future.
- vii. Rental estimate of the property

viii. Identification mark of the property, for example, street numbers and beacon plot number.

The main purpose of the surveyor's report is to verify that money to be borrowed will actually be used for that purpose. It will also testify if the money the applicant intends to borrow will be adequate for the project or not. The surveyor's report will also advice the bank on stages of disbursement - which is normally in three stages, namely:

- a. Stage 1 - Foundation level to lintel level
- b. Stage 2 - Roofing
- c. Stage 3 - Plastering and electrical fittings.

2.3.4 Disbursement of the Mortgage Loan

Mortgage disbursement is made in three stages. Before the first disbursement, the borrower should have been certified by the surveyor of having made his personal stake of a quarter of the loan applied for. Therefore, the surveyor will advice the company to make the first disbursement to the applicant.

After the stage of the disbursement is expended, the mortgagor writes to the company asking for the second disbursement. The surveyor goes back to inspect the satisfactory utilization of the disbursed loan and if satisfied, writes a report advising the company to make the second disbursement.

The same procedure is repeated to collect the last disbursement by the applicant.

2.3.5 Mortgage Repayments:

There are two types of repayments namely: interest repayment and mortgage monthly repayment.

- i. Interest Repayment: at the disbursement of the loan at each stage, the mortgagor is charged interest for three months on each disbursement.
- ii. Mortgage Monthly Repayment: is charged or calculated after the total loan has been disbursed accordingly. The mortgagor will now be placed on monthly repayment. Calculation of monthly repayment is made as follows:

$$\frac{\text{Amount of Loan}}{\text{Terms of Loan}} \times \frac{1}{12 \text{ months}} = \left. \begin{array}{l} \text{Amount for} \\ \text{Monthly} \\ \text{Repayment} \end{array} \right\} \begin{array}{l} \text{less} \\ \text{Insurance} \\ \text{Cost.} \end{array}$$

Any payment made is entered into the mortgage account ledger card, and subtracted from the capital balance. Any default in monthly repayment is debited against the mortgagor to form outstanding arrears. Interest is charged on the capital balance during the period of repayment on monthly bases as follows:

$$\frac{\text{Interest Rate} \times \text{Capital balance}}{12} = 1 \text{ month interest}$$

i.e

$$\frac{1 \text{ year interest}}{12} = 1 \text{ month interest.}$$

2.3.6 Redemption of Mortgage Loan:

The mortgaged account can only be redeemed through the following ways:

i. **Personal Redemption:**

This occurs when the mortgagor voluntarily redeems his account by obeying the mortgage obligations. It is the most natural way of redemption. The ability of the mortgagor to redeem voluntarily is to the mortgagor's own interest.

ii. **Public Auction:**

This is another method of redeeming a mortgage account. This method is utilized at the inability of the mortgagor to meet the mortgage obligation. The mortgage property is put in the market by public auction.

iii. **Private Treaty:**

A mortgage property is redeemed through private treaty when inability of the mortgagor to meet his mortgage obligation has become chronic. The property is sold without the knowledge of the mortgagor. In some cases the mortgagor requests for sale by private treaty in writing to the company. This may occur when:

- a. A customer alleges unfair sale
- b. The company is suing to recover loss arising from sales

- c. When a customer is disputing the company's right of sale
- d. The company is involved in litigation on tittle where a third party is challenging a mortgagor's title to the security.

2.3.7 Retrieval of Tittle Documents

The security document to the property is being kept by the legal personnel at the head office in Lagos. These documents can only be retrieved after the mortgagor has redeemed his account. The collectable securities include:

- i. The certificate of occupancy (C of O)
- ii. The deed of release
- iii. Building plan and site plan

The retrieval of tittle document is the last stage of operations in mortgage lending. Thereafter, the company have the course to rejoice with the customer and to advise him further to patronise her again.

2.3.8 Mortgagor's Enquiries

The mortgagors normally come to the company to make enquiries on their accounts. A mortgage officer is always at hand to attend to such enquiries which include:

- i. Their state of indebtedness
- ii. Advice on how to pay without defaulting
- iii. Request for rebate (interest waiver)
- iv. Monthly or yearly statement of account

2.3.9 Problems of Mortgage Operation:

The problems are of three fold. They are classified as it affects the customers, staff of the company and management of company.

i. Customers:

Some of the customers are not trustworthy. They may disappear after receiving first disbursement. In other cases some may not build any houses with the loan after receiving the last disbursement either through the wholesome or otherwise. Most times due to the customers' attitude, after receiving the first disbursement, other disbursements are not accurately being given to them because of time lag.

ii. Staff of the Company

There is job insecurity. Since the inception of FMF, several reorganisations, transfers and rationalisation of staff have been going on. There is need for staff training programme to improve the staff performance. The staff complain of shortage of manpower and an increasing difficulty in, manually, carrying out their duty schedules. It takes time to satisfy a customer's enquiries and this calls for automation.

iii. **Management of the Company**

The management is embattling with some constraints. As a liability company, it would like to keep afloat. Yet, it has to strike a balance between outright profit-making and provision of social services to Nigerian populace. The present banking outlet is suffering the same problem the banking industry is passing through; such problems as the present disposition of Nigerians towards savings. The company is highly dependent on funds mobilised through savings to be able to disburse same as mortgage loans to Nigerians.

2.3.10 Filing System

Mortgage files which contain all the transactions between the mortgagee (the company) and the mortgagor are kept and maintained in file jackets contained in a file cabinet in the office of the head of department of mortgage.

The files are arranged in ascending order using the computer numbers in the file cabinets. Current files are marked 'On Repayment' and are recorded on "in" or "out" register at the cabinet room for their movement. Apart from the computer number, the files also bear the name of the mortgagor. The records in the file are paginated for easier reference. Most of the files are suffering from

age and are unkept. In most cases, some piece of information is discovered missing from the file, and others not filed at all. This calls for a more efficient information management system.

2.3.11 Generation of Mortgage Report

The main mortgage reports generated include the reports that go to customers and those that go to the management. The customers reports include:

- i. Letters of offer
- ii. Statement of accounts
- iii. Letters of conveyance
- iv. Letters of warning.

The reports that are generated for the top management in Lagos are:

- a. Summary of outstanding applications for loan
- b. Arrears recovery performance
- c. List of mortgage disbursement made for the month
- d. Mortgage repayments, arrears, interest receipts on monthly basis
- e. Arrears collections, mortgage and interest payment for a particular month
- f. Arrears analysis for a particular month.

CHAPTER THREE

SYSTEM DESIGN

The design of this new system is based on the detail study of the existing system made in chapter two. The system specification of the users' requirements arrived at during the analysis of the existing system. Presently the following question can be answered:

- i. What is being done?
- ii. How is it being done?
- iii. How frequent does it occur?
- iv. How great is the volume of transactions or decisions
- v. How well is the task being performed
- vi. Does a problem exist?
- vii. If a problem exist how serious is it?
- viii. If a problem exists, what is the underlying cause?

3.1 OBJECTIVES:

In order to answer the questions above system specification for the new system was arrived to achieve the following objectives:

- i. To meet system requirement by specifying logical design elements such as inputs,

outputs, procedures, files and databases as well as their descriptions.

- ii. To ensure that the new system supports the organisation's performance.
- iii. To meet users requirements.
- iv. To provide a simple system
- v. To provide software specification to manipulate the system.

3.2 ELEMENTS OF DESIGN

The design elements include the output, inputs, files and procedures.

3.2.1 DESIGN OF OUTPUT

Outputs refers to the results and information that are generated by the system. Most end-users consider output as the main reason for developing the system and basis on which they will evaluate the usefulness of the application. Majority of the end-users have nothing or little to do with the operation of the information system or entering of data through work stations, but they will use output from the system.

The following were accomplished during design:

- i. The information to present were determined
- ii. It was decided whether it is to be displayed or printed

- iii. The acceptable format of presentation was used.
- iv. The distribution of the output to intended recipients and area of coverage as determined by the company.

The format of column headings, totals and sub-totals of daily transactions were considered to make for easy interpretation of reports.

3.2.2 DESIGN OF FILES

In designing the files decisions pertaining to the nature and content of the files itself such as whether it is to be used for storing transaction details, historical data or reference information were taken into consideration. A total of four files were used. The ledger, one transaction file, a file containing customer's record and one other file containing the guarantor's records.

Among the decisions made during file design are the following:

- i. The data items to be included in a record format within the file.
- ii. Length of each record, based on the characteristics of the data items on which it is based.
- iii. The sequencing or arrangement of records within the file (the storage structure, such sequential, indexed, or relative).

3:3 DATA MODELLING/NORMALISATION

Data models define the structure of files and make clearer the data needs of a business. Data was segregated into a separate files and its integrate data structure when developing the database.

Items which are independent of one another are separated into groups for recording in different files - (normalised). It was ensured that each of the four database files has a 'key' which uniquely identifies the object the data describes. Relationships between fields were established, for example, the relationship between the key field (Account Number) and the other fields of an object.

The file structures used are drawn up and normalised. The normalised structures are as follows:

3.3.1 Ledger.dbf - masterfile

Field	Fieldname	Type	Width	Dec.
1.	ACCT-NO	C	15	
2.	L-NAME	C	15	
3.	F-NAME	C	15	
4.	ADDRESS	C	40	
5.	L-DISBURS	N	10	2
6.	LOAN	N	10	
7.	DATE-REPAY	D	8	

8.	MOTH-REPAY	N	10	2
9.	INT-RATE	N	3	1
10.	DATE	D	8	
11.	REFERENCE	C	10	
12.	DEBIT	N	10	2
13.	CREDIT	N	10	2
14.	ARREARS	N	10	2
15.	BALANCE	N	10	2
16.	AGE	N	3	
17.	DATE-DISB	D	8	
18.	TOT-CRED	N	10	
19.	AGE-AREARS	N	3	
20.	LDATECAL	D	8	
21.	LAST-P	N	10	
22.	DISB	N	10	

3.3.2 TRANSAC-DBF - for daily transaction

Field	Fieldname	Type	Width	Dec
1.	ACCT-NO	C	15	
2.	DATE	D	8	
3.	L-NAME	C	15	
4.	F-NAME	C	15	
5.	LOAN	N	10	2
6.	REPA	N	10	2
7.	L-DISBURS	N	10	2
8.	TOT-CREDIT	N	10	2
9.	BALANCE	N	10	2
10.	ARREARS	N	10	2
11.	REPAY	N	10	2
12.	DISBURS	N	10	2

3.3.3 CUSTREC.DBF - file for customer's record

Field	Fieldname	Type	Width	Dec.
1.	ACCT-NO	C	15	
2.	L-NAME	C	15	
3.	F-NAME	C	15	
4.	RES-ADRES	C	40	
5.	LOAN	N	10	2
6.	BUS-ADD	C	40	

7.	PHONE	C	10	
8.	POST-ADD	C	40	
9.	AGE	N	3	1
10.	OCCUPATION	C	10	
11.	POST-HELD	C	20	
12.	NATIONAL	C	10	
13	MAR-STATUS	C	10	
14.	AGE-LOAN	N	3	

15.	ADD-PROD	C	50	
16.	LOAN-PUR	C	40	
17.	INSU-COST	N	10	

3.3.4 GUARANTOR.DBF - file for Guarantor's records

Field	Fieldname	Type	Width	Dec.
1.	TO-WHOM	C	15	
2.	L-NAM	C	15	
3.	F-NAME	C	15	
4.	RES-AD	C	40	
5.	BUS-AD	C	40	
6.	REL-APPL	C	20	
7.	DAT-BIRT	D	8	
8.	EMPLOYER	C	40	

9.	OCCUPATION	C	20
10.	EMP-DURA	C	15
11.	NET-IN	N	10
12.	TOT-IN	N	10
13.	BANK-ACC	C	15
14.	BANK-ADD	C	40
15.	ADD-SECU	C	40
16.	OTHER-COMP	C	50
17.	OTHER-INFO	C	40

3.4 DESIGN OF INPUT

The following input design details were considered:

- i. What data to input
- ii. What medium to use
- iii. How the data should be arranged or coded
- iv. The dialogue to guide users in providing input
- v. Data items and transactions needing validation to detect errors
- vi. Methods for performing input validation and steps to follow when errors occur.

The design decisions for handling input specify how data are accepted for computer processing. For the

propose system, data should be entered directly through work stations by using source documents such as the company's application form for mortgage loan, form for guarantor's records as well as the daily transactions.

The design of input includes specifying the means by which end-users and system operators direct the system on which actions to take. For example, the system user interacting a work station is able to tell the system whether to accept input, produce a report or end processing.

The system is designed to be on-line which include a dialogue or conversation between the user and the system. Through the dialogue, users request for system services and tell the system when to perform a certain function.

The arrangement of messages and comments and as well as the placement of data, headings, and tittles on display screen or source documents, which is also part of the input design is well considered. The system is fully menu driven and is very user friendly.

3.5 DESIGN OF CONTROL

It assumed that mistakes will be made in entering data or in requesting the performance of certain functions. Some mistakes may be very minor and inconsequential, while some can be so serious that they

could result in erasing of data or improper use of the system. For example, when opening new mortgage account, the account number which is a major distinguishing factor cannot be duplicated since the account numbers are automatically generated by the computer for any new account that is opened. Also during deletion of records, records marked for deletion is displayed for the operator to see and confirm that it is the required record marked for deletion.

In case of wrong entry, such records could be recalled and corrections made before saving. Every entry made must be confirmed before it is saved. Also the use of password is introduced in sensitive areas to ensure that only authorised users access the system.

3.6 DESIGN FORMAT

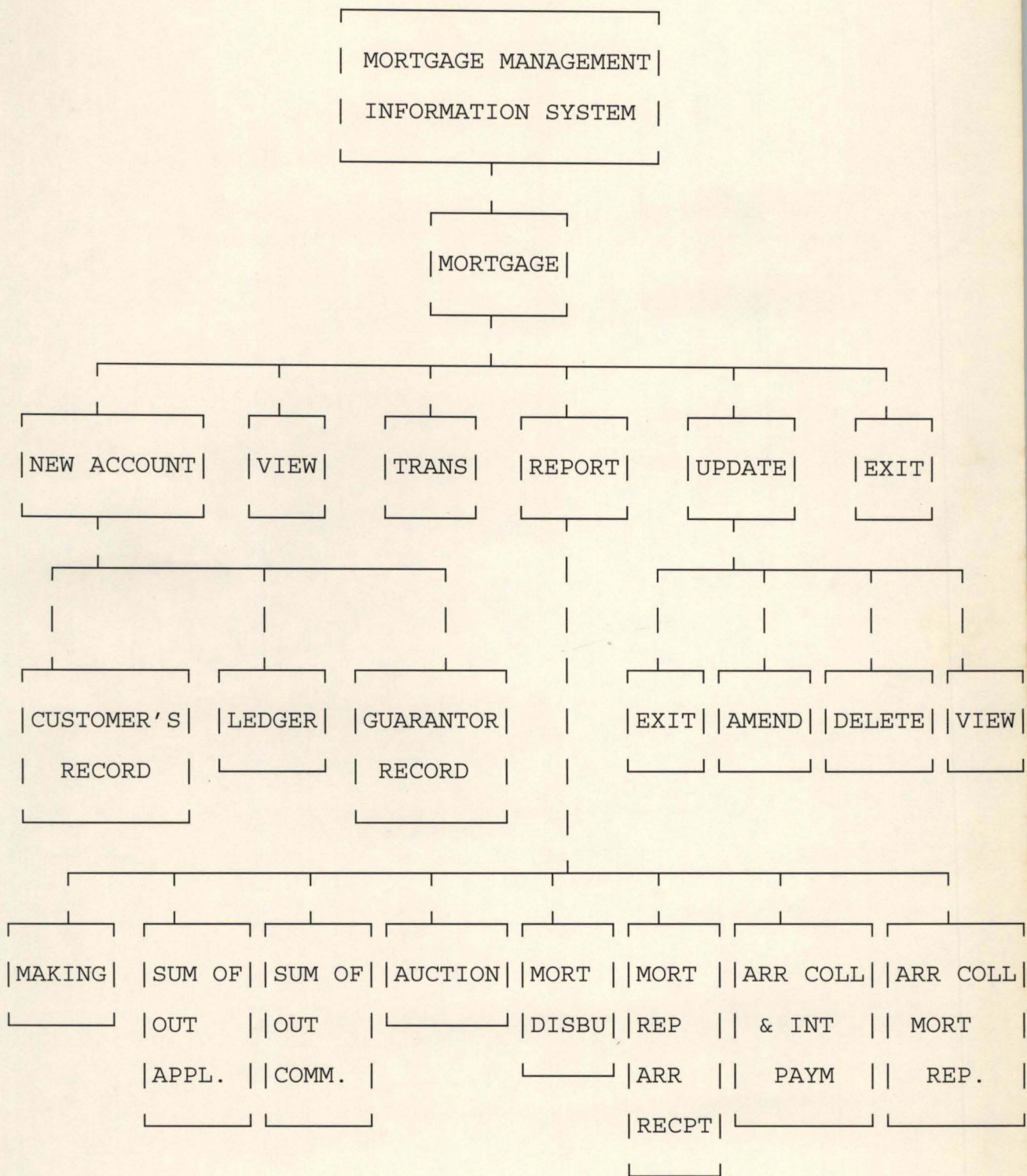


Fig. 3:1

CHAPTER FOUR

SYSTEM IMPLEMENTATION

Implementation embraces all the activities that place to convert from the old system to the new. the new system may be totally new, replacing an existing manual or automated system, or it may be a major modification of an existing system. In either case, proper implementation is essential to provide a reliable system to meet organisation requirements. There are three aspects of implementation, namely: training personnel, conversion procedures and the post implementation review.

4.1 TRAINING

Even well-designed and technically elegant systems can succeed or fail because of the way they are operated and used. Therefore, the quality of training given to the personnel involved with the system in various capacities helps or hinders, and may even prevent the successful implementation of an information system. Those who will be associated with or affected by the system must know in detail what their roles will be, how they can use the system and what the system will or will not do. Both system operators and users need training.

4.1.1 Training System Operators

The training of system operators must ensure that they are able to handle all possible operations both routine and extra ordinary. Training of operators must also involve the data entry personnel.

The operator should be acquainted with the installation of new equipments such as a new computer system, special terminals, or different data entry equipments and how to turn on such equipments. use it, power it down, and a knowledge of what constitutes normal operations and use. The operator should be conversant with what common malfunctions may occur, how to recognise them, and what steps to take when they arise. As part of the training, operators should be given a trouble shooting list that identifies possible problems and remedies for them, as well as the names and the telephone numbers of individual to contact when unexpected or unusual problem arise.

Training also involves familiarisation with run procedures, which involves working through the sequence of activities needed to use a new system on-going basis. These procedures allow the computer operators to become familiar with the actions they need to take (such as mounting magnetic disks or tapes, copying files, changing printers or changing disk drives), and when these actions must occur.

4.2 CONVERSION

Conversion is the process of changing from the old system to the new one. There are four methods of handling a system conversion. These include:

- Parallel system,
- Direct cutover
- Pilot systems, and
- Phase-in method.

Each method should be considered in light of the opportunities that it offers and problems that it may cause. However, some situations dictate the use of one method over others, even though other methods may be more beneficial. In general, systems conversion should be accomplished as quickly as possible. Long conversion periods increase the possible frustration and difficulty of the task for all persons involved.

4.2.1 Parallel System

The most secure method of converting from an old to new system is to run both system in parallel. Under this approach, users continue to operate the old system in the accustomed manner but they also begin using the new system and same input. The outputs are compared and reasons for differences resolved. The output from the old system continue to be distributed until the new system has proved satisfactory. At this point the old system discontinues and the new system takes its place.

This method is the safest conversion approach, since it guarantees, should problems such as errors in processing or inability to handle certain types of transactions arise in using the new system, the organisation can still fall back to the old system without loss of time, revenue or service.

This method of conversion is recommended for the proposed mortgage management information system because of the sensitive nature of mortgage finance business.

The disadvantages of the parallel systems approach are significant. Firstly, the system costs double, since there are two sets of system costs. In some instances it is necessary to hire temporary personnel to assist in operating both systems in parallel. Secondly, the fact that users know they can fall back to the old ways may be a disadvantage if there is potential resistance to the change or if user prefer the old system. In other words, the new system may not fair trial. All in all, the method offers the most secure implementation plan if things go wrong.

4.2.2. Direct Cutover

The direct cutover method converts from the old to the new system abruptly. Sometimes over a weekend or even overnight. The old system is used until a planned conversion day, when it is replaced by the new system.

The advantage of not having a fall-back system can turn into a disadvantage if serious problems arise with the new system. In some instances, organisations even stop operations when problems arise so that difficulties can be corrected.

4.2.3 Pilot Approach

When new systems also involve new technique or drastic changes in organisation performance, the pilot approach is often preferred. In this method, a working version of the system is implemented in some part of the organisation, such as a single work area or department. The users in this area have the understanding they are piloting a new system and changes can be made to improve the system. When the system is deemed complete, it is installed throughout the organisation, either all at once (direct cutover method) or gradually (phase-in-method).

This approach has the advantage of providing a sound proving ground before full implementation. However, if the implementation is not properly handled, users may develop the impression that the system continues to have problems and that it cannot be relied on.

4.2.3 Phase-in-method

The phase-in method is used when it is not possible to install a new system throughout an organisation all at once. The conversion of files, training of personnel, or

arrival of equipments may force the staging of implementation over a period of time, ranging from weeks to months.

4.3 POST IMPLEMENTATION REVIEW

After the system is implemented and conversion is completed, a review of the system is usually conducted by users and analysts alike. This is a formal process to determine how well the system is working, how it has been accepted, and adjustments are needed.

The review is also important to gather information for the maintenance of the system. As a good system cannot be closed, it should be maintained to give to addition of more information for interval development, such as new users or business activities, and external requirements, such as new legal requirements, industrial standards or competition.

The most fundamental concern during post implementation review is determining whether the system has met its objectives: wanting to know if the performance level of the users have improved and if the system is producing the result intended. Inability of the system to achieve any of these objectives may raise doubt on the workability of the system.

The quality of the system output merits special attention. The concerns raised during analysis and

design about the accuracy of information, the timeliness of presentation, completeness and the appropriateness of format continue to indicate system quality. Reports that are awkward to use or do not contain sufficient information to be useful may need design. Or the review reveal that the information previously thought unnecessary must be provided after all. This issue may in turn affect input requirements.

Ease of use and tendency toward errors in input are fundamental questions for the analyst to address during this review. Is the system easy to use? Are there adequate safe guards to prevent errors in input and to detect, report, and correct them if they occur? If the answers to these questions are not in the affirmative, the reliability and quality of the entire system may be doubted.

User confidence is generally also an indicator of system quality. The confidence that users, managers and operators have in the system are sure to affect its longevity and use. If evaluators find that confidence levels are not adequate, they must also determine why. The question of accuracy, completeness, timeliness, and usability continue to be central to the review.

Ease of use and benefits of use balance each other. It is generally found that systems that are easy to use and that provide distinct benefits are accepted and well

received by people. However, even when using a system that provides better performance, if the system itself is awkward to use, it is not uncommon to find that use of the system will be avoided. Thus ease of use is as important an attribute as reliability.

4.3.1 REVIEW METHODS

In general, the data collection methods of questionnaire, interview, observation, sampling, and record inspection are most useful for collecting details about the new system. In addition, supplemental methods will reveal additional information to evaluators. For example, event (critical incident) logging requires users to record unusual or unexpected events that impact the system.

These events may reflect incidents that the system cannot handle because of incomplete design or activities that are not occurring in the prescribed manner.

Impact evaluation determines how systems affect or change the areas of the organisation in which they are installed. If new system are proposed and developed on the basis of increased speed, decreased errors, better integration of activities, reduced data redundancy, or improved productivity, systems should be evaluated against these expectations. Sampling records for errors, assessing the value of throughput, or observing users

will provide concrete statistics of the effects of the system.

The impact of the system should also be compared with financial cost and benefits. Even if great productivity is achieved with a new system, management will want to know whether the changes produce the intended financial, service, or competitive advantages. During the system proposal stage, the expectation of costs and benefits are developed. After implementation, the system is reviewed to compare the actual costs and benefits with the expectation.

How do users and other persons affected by a new system, such as customers, suppliers or internal managers feel about the new system? This simple question reveals much about the future usefulness of the system. A system that is strongly disliked may not be in use long unless adjustments are made.

Attitude surveys, data collections of ideas and opinions about a system, provide this information pertinent questions probe individuals' feelings about the changes in the amount of work they perform, quality of their efforts, quality of the service to customers, ease of use, or acceptance of the system by co-workers.

These review methods emphasize the importance of collecting both quality qualitative and subjective data to determine the suitability of the system. There is no

substitute for effective review. Introspection and supposition have no place in systems development, even after the system is implemented.

4.4 COST AND BENEFITS

Development costs, including the cost already incurred for the system's study on which this report is based, will be approximately #60,000.00 Naira. There are distinct benefits to the new system, described in three categories. By developing the new system, the institution will be serving their costumers faster and good speed.

Owing to the new controls and improved procedures that is installed along with the new system, errors and unnecessary delays will be reduced. A very conservative estimate indicates that this amount will total at least #120,000.00 the first year. More customers will be attracted to the institution, more new mortgage accounts opened which means more revenue.

The system will produce benefits that are classified as intangible. Although they are both important and noticeable, it is difficult to place a naira value on them.

The new system has an anticipated life span of five years, although in the later years the cost of using and maintaining the system will increase. This is a normal expectation.

The system will pay for itself under 30 months. Hence the payback period for the proposed system is much better than average and is a cost effective investment.

If Federal Mortgage Finance Limited Management wishes to adopt the new system it is estimated that the training of personnel, and implementation will require only 21 days. "A system which is as twice as another system and which cost twice as much should be considered equivalent on the basis of a cost benefit analysis."

Some of this intangible benefits are:

- i. Better planning information
- ii. Better customer relations
- iii More satisfied employees
- iv. Ability to add communication and avoid courier costs (if expansion occurs).

4.5 MAINTENANCE

Maintenance is a fact of life in the development of information systems. However, the making of changes and adjustments do not necessarily signal correction of errors or the occurrence of problems.

Among the most frequent changes requested by end-users is the addition of information to a report format. Information requirements may be revised as the result of system usage or changing operational needs. Perhaps oversights that occurred during the development process need to be corrected.

Often the need will arise to capture additional data for storage in a database or in transaction file; or, perhaps it will be necessary to add error-detection features to prevent system users inadvertently taking an undesirable action.

These are the realities of application maintenance. When they occur, however, they are indication that the system is being used and that it is serving a useful function rather than being "shelved" by the intended end-users.

This system will be maintained by me for a period of two years for problems and errors attributable to the design.

4.6 HOW THE SYSTEM OPERATES

On booting the computer and entering Dbase 4 environment, the user, then, sets default to the drive containing the diskette. Then he types DO MMIS, and the first screen appears introducing the project (see fig. 4:1)

THIS MORTGAGE OPERATION SYSTEM IS THE ARCHITECT OF MR. EJIKEME GOODMAN OKORAFO, IN PARTIAL FULFILMENT OF AWARD OF POSTGRADUATE DIPLOMA IN COMPUTER SCIENCE, 1993/94 AT FEDERAL UNIVERSITY TECHNOLOGY, MINNA

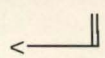


Fig: 4:1

The screen prompts the user to enter the return key. On obeying this command, he is ushered to the main menu screen (see fig. 4.2). On highlighting the first letters of the words on main menu the sub-menu under them will be accessed.

New Account View Transaction Report Update Exit													

Fig: 4:2

Starting with NEW ACCOUNT on striking N at the key board he will be required to enter the correct password. On doing this, the ledger format will be displayed on the screen to enable him enter ledger records in opening new account. (See fig. 4:3)

LEDGER

Surname	Other Names
Address	
Account No.	Date Placed on repayment
Amount of Loan	Monthly Repayment
Rate of Interest	Last date of Transaction
Reference	Debit
Credit	Arrears
Balance	Age

Entry Confirmed (Y/N)?

Fig. 4:3

If the entry is confirmed and no more records to is taken to customer's record format to open new customers records (see fig. 4:4).

CUSTOMER'S RECORD		
Surname	Other Names	
Residential Address		
Postal Address		
Occupation	Position	
Age of Applicant	Nationality	Phone
Marital Status		
Address of the Property to be Mortgaged		
Loan Required	Purpose of Loan	
Age of Loan	Insurance Cost	
Entry Confirmed (Y/N)?		

Fig. 4:4

On confirming this entry and answering no to demand for more records, he is taken to screen format for New Guarantor's record (see Fig. 4:5). This is the last record to enter and on confirming this entry, you are taken to the main menu.

GUARANTOR'S RECORD

Surname	Other Names	
Residential Address		
Business Address		
Relationship to Applicant		
Occupation	Duration of Employment	
Employer	Date of Birth	
Net Monthly Income	Total Monthly Income	Account No
Banker's Address		
Particulars of Property		
Financial Comittment		
Other Information		

Entry Confirm (Y/N)?

Fig. 4:5

Highlighting "V" at the main menu enables him to view the records of the customers in any of the four files (see fig. 4:6). On choosing any of the options between 1 to 4 will enable him view the records in the corresponding file. When there is no more record to view he is taken back to the main menu.

VIEW

ENTER ACCOUNT NO.

Which of the Records
1. Ledger
2. Customers Record
3. Guarantor's Record
Choose 1-3 Above

Any Option brings the file

Any more record to view (Y/N)?

Fig. 4:6

Highlighting "T" at the main menu ushers the user to the screen for daily mortgage transaction (see fig. 4:7 and fig. 4:8). At the first screen, the user will be requested to enter the account number on which the transaction is to be made. On entering the account number, the second screen will be displayed where the user can now assist the customer, to make either interest or mortgage repayment, or enter the amount disbursed to the customer in case of disbursement. On confirming entry and at the end of transaction, the user is returned to the main menu.

TRANSACTIONS

Daily Mortgage Transaction
Enter Account Number

Fig. 4:7

NAME	ACCOUNT NUMBER
LOAN GRANTED	LOAN DISBURSED
TOTAL CREDIT	BALANCE
ARREARS	AGE OF ARREARS
REPAYMENT	DISBURSEMENT
DATE	

Entry Confirmed? (Y/N)

Any more Transaction? (Y/N)

Fig. 4:8

On highlighting "R" at the main menu, the report screen appears (see fig. 4:9).

<p>Federal Mortgage Finance Limited Monthly Report</p> <p>Send Report to Printer? (Y/N)</p> <p>ENTER DATA OF REPORT / /</p>
--

Report of 3 Customers has been printed

Press any key to return to Menu

Fig. 4:9

If date of report is entered, the report is printed in the format bellow (see Fig. 4:10).

LIST OF MORTGAGE DISBURSEMENT MADE DURING THE MONTH OF:May

S/NO	NAME	ACCT	DISBURS	REPAYMENT	BALANCE	ARREARS	AGE
1	OKORAFO GOODMAN	1	600000.00	0.00	725455.13	5000.00	0
2	AKANI EMMANUEL	2	200000.00	0.00	212304.03	1000.00	0
3	ONONYE CLIFF	3	100000.00	.	106152.01	5000.00	0
4	IGWE CHARLES	4	75000.00	.	79614.02	400.00	0
5	ABU JOSEPH	5	100000.00	.	106152.01	3000.00	0
6	UDUMA OJO	6	100000.00	.	106152.01	4000.00	0
7	AMU BEN	7	75000.00	.	79614.02	2000.00	0
8	OGENYI MIKE	8	100000.00	.	106152.01	5000.00	0
9	BELLO CHADO	9	75000.00	.	79614.02	3000.00	0
10	KUDU CHADO	10	120000.00	.	127382.41	5000.00	0
11	ALLEY BUNMI	11	100000.00	.	106152.01	4000.00	0
12	NMAJU STEPHEN	12	100000.00	.	106152.01	3000.00	0
13	ABOI SULE	13	150000.00	.	159228.03	6000.00	0
14	ANTHONY JIREH	14	75000.00	.	79614.02	2000.00	0
15	SHEHU YABAGI	15	100000.00	.	106152.01	5000.00	0
16	ORIJI OLALEKAN	16	100000.00	.	106152.01	4000.00	0
17	DOSUM OLAWALE	17	50000.00	.	53076.01	2000.00	0
18	RASAQ BUSARI	18	100000.00	.	106152.01	5000.00	0
19	JOSHUA SAIDU	19	150000.00	.	159228.03	6000.00	0
20	ADAMU GAMBO	20	100000.00	.	106152.01	5000.00	0
21	ODUMOSU OLU	21	100000.00	.	106152.01	4000.00	0
22	LAWAL RONKE	22	150000.00	.	159228.03	5000.00	0
23	AKIDELE SAMSON	23	75000.00	.	79614.02	3000.00	0
24	OBI JONES	24	150000.00	.	159228.03	6000.00	0
25	MOHAMMED NMODU	25	140000.00	.	148612.82	5000.00	0
26	ABDUL OBENGA	26	100000.00	.	106152.01	4000.00	0
27	YUSUF FATIMA	27	100000.00	.	106152.01	5000.00	0
28	BELLO RAMATU	28	100000.00	.	106152.01	5000.00	0
29	OGIDO ELIJAH	29	150000.00	.	159228.03	6000.00	0
30	WAINDIM ALBERT	30	100000.00	.	106152.01	3000.00	0
31	BAKO JULIUS	31	100000.00	.	106152.01	400.00	0

Fig. 4:10

Highlighting "U" at the main menu takes the user to the update screen (see fig. 4:11).

{C}	CALCULATION
{A}	AMENDMENT OF RECORD
{D}	DELETION OF RECORD
{V}	VIEWING OF RECORD
{R}	RETURN TO MAIN MENU

ENTER THE FIRST LETTER FOR YOUR CHOICE!

Fig. 4:11.

On highlighting C in fig. 4:11, the screen for calculation of Interest and Age of Arrears appears (see fig. 4:12).

C. Calculation of Interest And Age of Arrears

Last Date of Calculation	/	/
Enter Today's Date	/	/
Enter Rate of Interest	<input type="text"/>	

Fig. 4:12.

On Supplying the information on the screen the operation is carried out.

If "A" is highlighted, the user is confronted with the ammendment of Records screen giving four uptions (see fig. 4:13).

A

Amendments of Records	
Which of the Records?	
1.	Ledger
2.	Customer's Record
3.	Guarantor's Records
4.	Transaction
Choose 1-4 Above	

Amendment of Ledger File

Enter Account number to amend.

Any more account to Amend? (Y/N)

Fig. 4:13

On chosing any of the options, the user is requested to enter the account number of the customer. At the end of ammendments the user is returned to ammendment sub-menu.

If "D" is highlighted, the user is taken to deletion screen (see fig. 4:14). It is only three files that could be ddeleted upon.

D.

Which of the Records
1. Ledger
2. Customers' Record
3. Guarantors Record
Choose 1-3 Above
Do you want this record deleted? (Y/N)
Any More Record to Delete? (Y/N).

Fig. 4:14

If "V" is highlighted, the view screen appears (see fig. 4:15). This enables the user to view the ammendment on any of the three files.

V Enter Account Number

Which of the Records
1. Ledger
2. Customer's Record
3. Guarantor's Record

Choose 1-3 Above.

Any More Record to View? (Y/N).

Fig. 4:15.

If "R" is highlighted the user is returned to the main menu.

Highlighting the "E" at the main menu returns the user to the DOS prompt.

CHAPTER FIVE

SOME ANALYSES, RECOMMENDATIONS AND CONCLUSION

The main aim of computerising the Mortgage lending operation in Federal Mortgage Finance Limited, Minna Branch is to make improvements in the operations of the institution. Such operations which are, presently, being carried out manually have been automated by computerisation.

5.1 SOME ANALYSES

During the course of study, it was noted that the manual operations hampers speed and accuracy of the mortgage lending operations and thereby stepping down efficiency of the system. By computerisation, the following area of improvement has been achieved:

5.1.1 Storage of Information:

Presently, the manual system of storing information in files and cabinets is cumbersome. Movement of such files from cabinet to officers table and the method of filing information in such files are time consuming and prone to mistakes such as mis-filing and mal-handling of both information and files. Computerisation provides a better mortgage information management that makes storage, manipulations, processing, updating and

retrieval of information easier and efficient. It also affords large acquisition of mortgage information and has facilities to maintain accuracy.

5.1.2 Time Saving

Generally, customers that come to enquire one information or the other are usually in a hurry and expect to be attended to speedily, and to be supplied accurate information. However, this demand has always run into some bottlenecks, either that the mortgage file containing such information cannot be traced or that the officer-in-charge is not on seat. The new system has eliminated such bottlenecks as time for searching, locating, retrieval of such information and furnishing it to the customers has been reduced to barest minimum with a stroke of buttons at the computer consul.

Cross-referencing, another aspect of mortgage operation that is time consuming has been made very easy by the new system as the user can view several files in a moment with the right command.

5.1.3 Report Generations

Report generations to both customers and management has always been tedious, incomplete and the time lag that goes with it. The new system has in-built facilities that can generate such reports weekly, monthly and annually on demand.

5.1.4 Security Devices/Check

The existing system relies mainly on staff cooperation to maintain a level of secrecy in handling of information affecting customers. The new system has introduced some security device by use of passwords to limit information flow to a particular level of management. Should any piece of information from the institution flow into the wrong hand, it is traceable to a particular mortgagee who has the password to such information.

5.1.5 Speedy Mortgage Operations

Such mortgage operations like calculation of interest and mortgage repayments, which, in the existing system is done manually for every customer with its attended miscalculation, time-wasting and poor customer/institution relation has been highly been improved by the proposed system. In the new system, procedures to speedily and accurately do such calculations in record time has been built into the system.

The beauty and joy of appreciating this new system cannot be described in words until one makes use of the software (See Appendix).

5.1.6 The System Hardware/Software

The system hardware for the new system is a personal computer (PC) with hard disk and a good storage facility. The 486 PC is most appropriate operated for Local Area Network.

The Software has been designed using dbase IV with some key characteristics it exhibits such as its simplicity, flexibility and reliability.

5.2 RECOMMENDATIONS

A worthwhile effort has been made to computerise mortgage lending operations. Although this study focused on Federal Mortgage Finance Limited, Minna Branch, the proposed system will also be beneficial to other branches of Federal Mortgage Finance Limited scattered all over the Federation. It is, thereby recommended that:

- i. The proposed system be installed in Federal Mortgage Finance Limited, Minna Branch so as to take advantage of the good results of the proposed system like speed and accuracy.
- ii. In the same way and for same reason, the system is recommended for use in all other branches of the Federal Mortgage Finance Limited all over the Federation.
- iii. Other mortgage institutions may wish to adopt

- the system for better results in their firms.
- iv. The author of this system is available to any institutions or persons that might be interested in the system, either to install or adopt it for use with little or no modifications.
 - v. This system has the capacity of being used in a Local Area Network. It will save cost, improve services, and will build confidence in the minds of customers.
 - vi. The management of Federal Mortgage Finance Limited should take a serious step in computerising all its branches and making sure that the headquarters has a similar outfit to be able to coordinate and control transactions in the branches effectively.

The production of this system is based on hard work and has consumed time, money and materials. The only job the designer will have is to see this system used in transforming mortgage operations in Nigeria, especially in Federal Mortgage Finance Limited nationwide, starting with Minna Branch.

5.2 CONCLUSION

The goal of developing a computerised mortgage lending which operates in a Local Area Network has been well achieved. The system is limited to Mortgage lending operations and mainly affects the mortgage department of the institution under study.

The system covers from opening new mortgage account, granting of mortgage loan, interest repayment, mortgage repayment to report generations.

Limitations due to finance and time contributed to limiting the work to mortgage lending. Other researchers may like to computerise the banking, finance and administrative departments of the institution. If the development of the system is sponsored, it is certain that nearly all the mortgage operations will be full automated and that has been the aim of employing computer in the mortgage industry.

DEFINITION OF TERMS

FMBN	-	Federal Mortgage Bank of Nigeria
FMF LTD.	-	Federal Mortgage Finance Limited
Mortgager	-	Give somebody a claim on (property) as security for payment of debt or loan.
Mortgagee	-	Person to whom property is mortgaged
Mortgagor	-	Person who gives a mortgage on his property.
MD	-	Managing Director
ED	-	Executive Director
AGM	-	Assistant General Manager
HOD	-	Head of Department
MMIS	-	Mortgage Management Information System.

BIBLIOGRAPHY

BOOKS:

1. Alfred, A. Ring (1970), The valuation of Real Estate, Pintice - Hall INC.
2. Emery, G;yn (1979), Elements of Computer Science, Pitman, London.
3. French, C. S. (1993), Computer Studies, ECDB with DP Publications.
4. Joe Wiley et. al (1991), Getting Started with DbaseIII Plus Extended, John Wiley and Sons, INC, Canada.
5. Lee, Graham (1982), From Hardware to Software: An Introduction to Computer. Macmillan, London.
6. Lucas, H. C. (1985) The Analysis, Design And Implementation System, Mcgraw Hill L.C., Singapore.
7. Nwabueze, B. O. (1972), Nigerial Land Law, Nwamife Publishers Limited.
8. Simpson A. (1983), Understanding Dbase III Plus.

ARTICLES, PERIODICALS AND REPORTS

1. Remi Onabule (1992), Mortgage Banking in Nigeria, Yesterday, Today, Article contributed to Journal Housing Today, Vol. 8 No. 3 November, 1992.
2. Mortgage News (1995); Radio Nigeria Focuses on FMFL. A quarterly In-House journal of Federal Mortgage Finance Limited, Vol.1 No.2

APPENDIX

```
PUBLIC date, talk, echo, status, MACCOUNT
SET TALK OFF
SET ECHO OFF
SET STATUS OFF
SET DATE BRITISH
SET COLO TO W/R+
KOUNT = 0
A = 1
DO WHILE A <= 20
@ A,4 SAY REPL (CHR(176),74)
A = A+1
ENDD
SET COLO TO W/B+
B=19
DO WHILE B >=2
@ B,8 SAY REPL (CHR(178),67)
B=B-1
ENDD
SET COLO TO G/N+
@ 3,11 CLEA TO 18,71
@ 4, 13 TO 17,69 DOUB
@7,18 SAY ' THIS MORTGAGE OPERATION SYSTEM IS THE
ARCHITECT'
@9,18 SAY ' OF MR EJIKEME GOODMAN OKORAFO , IN PARTIAL
```



```
@11,18 SAY 'FUFILMENT OF AWARD OF POSTGRADUATE DIPLOMA IN'  
@13,18 SAY 'COMPUTER SCIENCE, 1993 / 94 AT FEDERAL  
UNIVERSITY'  
@ 15,18 SAY ' OF TECHNOLOGY, MINNA'  
SET COLO TO G/N+*  
@16,60 SAY CHR(017)+CHR(196)+CHR(196)+CHR(217)  
SET COLO TO W/B+  
WAIT''
```

```
*EG=0
```

```
*SET CONSOL OFF
```

```
*DO WHILE EG <=350
```

```
*?
```

```
*EG=EG+1
```

```
*ENDD
```

```
*SET CONSOL ON
```

```
DO WHILE .T.
```

```
DO ASCII
```

```
@ 2,5 TO 4,75 DOUB
```

```
@ 3,6 SAY 'NEW ACCOUNT'
```

```
@ 3,20 SAY 'VIEW'
```

```
@ 3,30 SAY 'TRANSACTION'
```

```
@ 3,47 SAY 'REPORT'
```

```
@ 3,60 SAY 'UPDATE'
```

```
@ 3,68 SAY 'EXIT'
```



```
SET COLO TO R+
@ 3,6 SAY 'N'
@ 3,20 SAY 'V'
@ 3,30 SAY 'T'
@ 3,47 SAY 'R'
@ 3,60 SAY 'U'
@ 3,68 SAY 'E'
*do while .t.
STORE ' ' TO CHOICE
@ 13,40 GET CHOICE PICT '!'
READ
DO CASE
CASE CHOICE = 'N'
DO PASS1
CASE CHOICE = 'V'
DO VIEW
CASE CHOICE = 'T'
DO PASS2
CASE CHOICE = 'R'
DO PASS6
CASE CHOICE = 'U'
DO UPDATE
CASE CHOICE = 'E'
DO ENDS
OTHERWISE
@ 10,15 SAY 'PRESS ANY OF THE HIGHLIGHTED LETTERS FROM
```


MINT=3

STORE CTOD (' / / ') TO MDATE,MDATEDIS

STORE SPACE(10) TO MREF

MDEBIT=10

MCREDIT=10

MARREARS=10

MBALANCE=10

MAGE=3

IF .NOT. EOF()

GO BOTT

ENDIF

MACCOUNT=ACCT_NO + 1

CLEA

DO WHILE .T.

DO FOMAT

READ

@ 23,20

SET COLO TO G/B+

WAIT SPACE(25) + 'ENTRY CONFIRMED? (Y/N) ' TO ENTR

SET COLO TO W/B

IF UPPER(ENTR) = 'N'

LOOP

ELSE

IF UPPER(ENTR) = 'Y'

ENDIF

ENDIF

EXIT

ENDD

APPEND BLANK

REPL L_NAME WITH SURNAME, F_NAME WITH OTHERS, ADDRESS WITH
MADDRESS

REPL ACCT_NO WITH MACCOUNT, LOAN WITH MLOAN, DATE_REPAY
WITH MDATEPAY

REPL MONTH_REP WITH MMONTH, INT_RATE WITH MINT, DATE WITH
MDATE

REPL REFENCE WITH MREF, DEBIT WITH MDEBIT, LAST_PAY WITH
MCREDIT

REPL ARREARS WITH MARREARS, BALANCE WITH MBALANCE, AGE WITH
MAGE

REPL DATE_DISB WITH MDATEDIS

*CLOSE DATABASES

EXIT

ENDD

DO CUSTREC

***** FORMAT FILE FOR NEW LEDGER RECORD *****

CLEA

SET COLO TO W/B+

@ 3,8 TO 22,72 DOUB

@ 5,34 SAY 'LEDGER'

@ 6,34 TO 6,39 DOUB

@ 7,10 SAY 'SURNAME' GET SURNAME PICT '@A'

@ 7,36 SAY 'OTHER NAMES' GET OTHERS PICT '@A'

@ 9,10 SAY 'ADDRESS' GET MADDRESS
@11,10 SAY 'ACCOUNT NO'
@11,21 SAY MACCOUNT
@11,37 SAY 'DATE PLACED ON REPAYMENT' GET MDATEPAY
@13,10 SAY 'AMMOUNT OF LOAN' GET MLOAN PICT '99999999.99'
@ 13,38 SAY 'MONTHLY REPAYMENT' GET MMONTH PICT '9999.99'
@ 15,10 SAY 'RATE OF INTEREST' GET MINT PICT '99'
@ 15,38 SAY 'LAST DATE OF TRANSACTION' GET MDATE
@ 17,10 SAY 'REFERENCE' GET MREF PICT '@A'
@ 17,36 SAY 'DEBIT ' GET MDEBIT PICT '99999999.99'
@ 19,10 SAY 'CREDIT' GET MCREDIT PICT '99999999.99'
@ 19,35 SAY 'ARREARS' GET MARREARS PICT '99999999.99'
@ 21,10 SAY 'BALANCE' GET MBALANCE PICT '99999999.99'
@ 21,39 SAY 'AGE' GET MAGE PICT '99'

***** PROGRAM TO OPEN NEW CUSTOMERS RECORD

CLEA

CUSTREC = .T.

*DO WHILE CUSTREC

ENTR = ' '

*STORE SPACE(40) TO MADD,MPAD,MLOANP

*STORE SPACE(10) TO MPHONE,MOCCUP,MNATION,MSTATUS

*STORE SPACE(20) TO MPOS,SNAME,OTHERS

MAGEL = 0

*MLOAN = 10

*MACCOUNT=10


```
*MAG = 3
*STORE SPACE(50) TO MADDP
*MINSURE = 0
SELE B
*USE CUSTREC INDEX CUSTREC
IF .NOT. EOF()
GO BOTT
ENDIF
DO WHILE .T.
DO CUSTFORM
READ
WAIT SPACE(26) + 'ENTRY CONFIRMED? (Y/N)' TO ENTR
SET COLO TO W/B
IF UPPER(ENTR) = 'N'
LOOP
ELSE
IF UPPER(ENTR) = 'Y'
EXIT
ENDIF
ENDIF
EXIT
ENDD
SELE B
APPE BLANK
REPL L_NAME WITH SURNAME
REPL F_NAME WITH OTHERS,BUS_ADD WITH MADDRESS,ACCT_NO
```



```

WITH MACCOUNT
REPL RES_ADD WITH MADDRESS, PHONE WITH MPHONE, POST_ADD
WITH MPAD
REPL AGE WITH MAGE, OCCUPATON WITH MOCCUP, LOAN WITH
MLOAN
REPL POST_HELD WITH MPOS, NATIONAL WITH MNATION,
MAR_STATUS WITH MSTATUS
REPL AGE_LOAN WITH MAGEL, ADD_PROP WITH MADDP, LOAN_PUR
WITH MLOANP
REPL INSU_COST WITH MINSURE
*ENDD
*CLOSE DATABASES
SELE C
DO GARANTOR
*****      FORMAT      PROGRAM      FOR      CUSTOMERS'RECORD
*****
SET COLO TO W/B+
@ 3,4 TO 23,72 DOUBLE
@ 4,28 SAY "CUSTOMER'S RECORD"
@ 5,28 TO 5,44 DOUB
@ 5,48 SAY 'ACCOUNT NO:' + ' ' + LTRIM(STR(MACCOUNT))
@ 6,6 SAY 'SURNAME:' GET SURNAME
@ 6,38 SAY 'OTHERNAMES:' GET OTHERS
@ 8,6 SAY 'RESIDENTIAL ADDRESS:' GET MADDRESS
@ 10,6 SAY 'POSTAL ADDRESS' GET MPAD
@ 12,6 SAY 'OCCUPATION ' GET MOCCUP

```


@ 12,34 SAY 'POSITION HELD' GET MPOS
@ 14,6 SAY 'AGE OF APPLICANT' GET MAGE PICT '999'
@ 14,28 SAY 'NATIONALITY' GET MNATION
@ 14,53 SAY 'PHONE' GET MPHONE
@ 16,6 SAY 'MARITAL STATUS' GET MSTATUS
@ 16,36 SAY 'LOAN REQUIRED' GET MLOAN PICT '99999999.99'
@ 17,6 SAY 'ADDRESS OF THE PROPERTY TO BE MORTGAGED:'
@ 18,6 GET MADDP
@ 20,6 SAY 'THE PURPOSE OF LOAN ' GET MLOANP
@ 21,26 SAY 'INSURANCE COST'
@ 21,50 SAY 'AGE OF LOAN'
@ 22,26 GET MINSURE PICT '99999999.99'
@ 22,50 GET MAGEL

***** PROGRAM TO OPEN GUARANTOR'S RECORD *****

CLEA

KOUNT=0

*GARANT= .T.

ENTR = ' '

STORE SPACE(1) TO MORE

S T O R E S P A C E (1 5) T O

SONAME, MORE, MWHOM, MORRE, MEMPL_DU, MBANACCT

S T O R E S P A C E (4 0) T O

MRESADD, MEMPL, MBUSADD, MBANADD, MADDSEC, MOTH_INF

STORE SPACE(25) TO MEMPL

STORE SPACE(20) TO MREL_APP, MOCCUPA

STORE SPACE(40) TO MOTH_COM


```

MNETIN=10
MTOT=10
STORE CTOD (' / / ') TO MDATEB
USE GUARANTOR
IF .NOT. EOF()
GO BOTT
ENDIF
DO WHILE .T.
DO FORMATS
READ
WAIT SPACE(26) + 'ENTRY CONFIRMED? (Y/N)' TO ENTR
SET COLO TO W/B
IF UPPER(ENTR) = 'N'
LOOP
ELSE
IF UPPER(ENTR) = 'Y'
EXIT
ENDIF
ENDIF
ENDD
APPE BLANK
REPL TO_WHOM WITH MWHOM,L_NAME WITH SONAME,F_NAME WITH
MORRE,RES_AD WITH;
MBUSADD,REL_APPL WITH MREL_APP,DAT_BIRT WITH
MDATEB,EMPLOYER WITH MEMPL,;
OCCUPATION WITH MOCCUPA,EMP_DURA WITH MEMPL_DU,NET_IN

```



```

WITH MNETIN,TOT_IN;
  WITH  MTOT,BANK_ACT  WITH  MBANACCT,BANK_ADD  WITH
MBANADD,ADD_SEC WITH;
  MADDSEC,OTHER_COM WITH MOTH_COM,OTHER_INF WITH MOTH_INF,
ACCT_NO WITH MACCOUNT
KOUNT=KOUNT+1
SET COLO TO G/B+
@24,26 SAY 'ANY MORE RECORD TO OPEN? (Y/N)'GET MORE PICT
'Y'
SET COLO TO W/B+
READ
DO WHILE .T.
  IF UPPER(MORE) = 'Y'
  EXIT
DO LEDGER
ENDIF
CLEA
@10,21 SAY 'YOU HAVE OPENED' + ' ' + STR(KOUNT,3) + ' '
+;
  'NEW MORTGAGE ACCOUNT(S)'
@12,21 SAY 'YOU NOW HAVE A TOTAL OF' + ' ' +
LTRIM(STR(RECCOUNT())) + ' ' +;
  'MORTGAGE ACCOUNTS'
@ 14,25
WAIT SPACE(25) + 'ANY KEY TO RETURN TO MAIN MENU'
EXIT

```


CLOSE DATABASES

ENDD

RETURN

***** FORMAT PROGRAM FOR GUARANTOR'S RECORD

CLEA

SET COLO TO W/B+

@ 1,5 TO 23,72 DOUB

@ 2,28 SAY "GUARANTOR'S RECORD"

@ 3,28 TO 3,46 DOUB

@ 3,49 SAY 'ACCOUNT NO:' + ' ' + LTRIM(STR(MACCOUNT))

@ 4,8 SAY 'SURNAME' GET SONAME

@ 4,35 SAY 'OTHER NAMES' GET MORRE

@ 6,8 SAY 'RESIDENTIAL ADDRESS' GET MRESADD

@ 8,8 SAY 'BUSINESS ADDRESS' GET MBUSADD

@ 10,8 SAY 'RELATIONSHIP TO APPLICANT' GET MREL_APP

@ 11,8 SAY 'OCCUPATION' GET MOCCUPA

@ 11,40 SAY 'DURATION OF EMPL.' GET MEMPL_DU

@12,48 SAY 'DATE OF BIRTH' GET MDATEB

@12,8 SAY 'EMPLOYER' GET MEMPL

@ 13,8 SAY 'NET MONTHLY INCOME'

@ 14,10 GET MNETIN

@ 13,30 SAY 'TOTAL MONTHLY INCOME'

@14,35 GET MTOT

@ 13,52 SAY 'ACCOUNT NO'

@14,52 GET MBANACCT


```

@ 16,8 SAY 'BANK ADDRESS' GET MBANADD
@ 18,8 SAY 'PARTICULARS OF PROPERTY' GET MADDSEC
@ 20,8 SAY 'FINANCIAL COMITMENTS' GET MOTH_COM
@ 22,8 SAY 'OTHER INFORMATION' GET MOTH_INF
***** PROGRAM TO OPEN NEW LEDGER ACCOUNT
*****

SELE A
USE LEDGER INDEX LEDGER

SELE B
USE CUSTREC INDEX CUSTREC

NEWACT = .T.
DO WHILE NEWACT
ENTR = ' '
S T O R E      S P A C E ( 1 5 )      T O
SURNAME, OTHERS, MACCOUNT, MOCCUP, MPOS, MLOANP
STORE SPACE(40) TO MADDRESS, MPAD, MADDP
MAGE=0
STORE SPACE(12) TO MNATION, MPHONE, MSTATUS
MINSURE=0
MLOAN=0
STORE CTOD (' / / ') TO MDATEPAY
STORE SPACE(10) TO MMONTH
MINT=0
STORE CTOD (' / / ') TO MDATE, MDATEDIS
STORE SPACE(10) TO MREF

```



```
MDEBIT=0
MCREDIT=0
MARREARS=0
MBALANCE=0
MAGE=0
IF .NOT. EOF()
GO BOTT
ENDIF
MACCOUNT=ACCT_NO + 1
CLEA
DO WHILE .T.
DO FOMAT
READ
@ 23,20
SET COLO TO G/B+
WAIT SPACE(25) + 'ENTRY CONFIRMED? (Y/N) ' TO ENTR
SET COLO TO W/B
IF UPPER(ENTR) = 'N'
LOOP
ELSE
IF UPPER(ENTR) = 'Y'
ENDIF
ENDIF
EXIT
ENDD
SELE A
```


APPEND BLANK

REPL L_NAME WITH SURNAME, F_NAME WITH OTHERS, ADDRESS WITH
MADDRESS

REPL ACCT_NO WITH MACCOUNT, LOAN WITH MLOAN, DATE_REPAY
WITH MDATEPAY

REPL MONTH_REP WITH MMONTH, INT_RATE WITH MINT, DATE WITH
MDATE

REPL REFENCE WITH MREF, DEBIT WITH MDEBIT, CREDIT WITH
MCREDIT

REPL ARREARS WITH MARREARS, BALANCE WITH MBALANCE, AGE WITH
MAGE

REPL DATE_DISB WITH MDATEDIS

*CLOSE DATABASES

EXIT

ENDD

SELE B

DO CUSTREC

***** PROGRAM FOR DAILY TRANSACTION *****

CLEA

ACCOUNT=0

STORE SPACE(1) TO CHECK, MORE

SELE A

USE LEDGER INDEX LEDGER

SELE B


```
USE TRANSACT
DO WHILE .T.
CLEA
REPAY = 0
MDISBUS = 0
STORE CTOD(' / / ') TO MD
SET COLO TO W/B+,R
@12,20 TO 17,60
@14,22 SAY 'DAILY MORTGAGE TRANSACTION'
@16,22 SAY 'ENTER ACCOUNT NUMBER' GET ACCOUNT PICT '@B999'
READ
SELE A
SEEK ACCOUNT
DO WHILE .T.
CLEA
SET COLO TO W/B,G
@ 3,8 TO 21,72 DOUB
@ 5,25 SAY 'DAILY MORTGAGE TRANSACTION'
@ 6,25 TO 6,50

@8,10 SAY 'NAME:'
@8,15 SAY A-> L_NAME + LTRIM(A-> F_NAME)
@8,40 SAY 'ACCOUNT NUMBER: '
@8,58 SAY ACCOUNT PICT '@B9999'
@10,10 SAY 'LOAN GRANTED'
@10,24 SAY A->LOAN PICT '@B.99'
```



```

@10,40 SAY 'LOAN DISBURSED'
@10,60 SAY A->L_DISBURS PICT '@B99999999.99'
@12,10 SAY 'TOTAL CREDIT:'
@12,24 SAY A->CREDIT PICT '@B99999999.99'
@12,40 SAY 'BALANCE:'
@12,49 SAY A-> BALANCE PICT '@B99999999.99'
@14,10 SAY 'ARREARS:'
@14,19 SAY A-> ARREARS PICT '@B99999999.99'
@14,40 SAY 'AGE OF ARREARS'
@14,55 SAY AGE_ARREA PICT '@B'
@16,10 SAY 'REPAYMENT' GET REPAY PICT '99999999.99'
@16,40 SAY 'DISBURSMENT' GET MDISBUS PICT '99999999.99'
@18,10 SAY 'DATE:' GET MD
READ
@23,25 SAY 'ENTRY CONFIRMED? (Y/N)' GET CHECK
READ
IF UPPER(CHECK) = 'Y'
    EXIT
ENDIF
ENDD
SELE B
APPE BLANK
REPL ACCT_NO WITH ACCOUNT,DATE WITH MD,L_NAME WITH
A->L_NAME, ;
F_NAME WITH A->F_NAME,LOAN WITH A->LOAN,REPAYMENT WITH
REPAY, ;

```


DISBURS WITH MDISBUS

SELE A

REPL DATE WITH MD

IF MDISBUS = 0

REPL BALANCE WITH BALANCE-REPAY

REPL CREDIT WITH REPAY

REPL ARREARS WITH ARREARS-REPAY

REPL TOT_CRED WITH TOT_CRED + REPAY

ELSE

IF MDISBUS > 0

REPL BALANCE WITH BALANCE + MDISBUS

REPL L_DISBURS WITH MDISBUS

REPL DEBIT WITH DEBIT + MDISBUS

ENDIF

ENDIF

@23,3 CLEA

@23,25 SAY 'ANY MORE TRANSACTION? (Y/N)' GET MORE PICT

'Y'

READ

IF UPPER(MORE) = 'Y'

LOOP

ELSE

EXIT

ENDIF

ENDD

CLOSE ALL

RETURN

***** PROGRAM TO VIEW RECORDS *****

ACCOUNT=0

STORE SPACE(1) TO VIEW

VIEW = .T.

DO WHILE VIEW

ACCOUNT=0

CLEA

@13,22 SAY "ENTER ACCOUNT NUMBER" GET ACCOUNT

READ

CLEA

@9,19 TO 18,44 DOUB

@11,22 SAY "WHICH OF THE RECORDS?"

@13,22 SAY '1. LEDGER '

@15,22 SAY "2. CUSTOMER'S RECORD"

@17,22 SAY "3. GUARANTOR'S RCORD"

REC = 0

@19,22 SAY 'CHOOSE 1-3 ABOVE'

@19,39 GET REC PICT '9' RANG 1,3

READ

CLEA

DO WHILE .T.

IF REC = 1

USE LEDGER INDEX LEDGER

* GO TOP


```
SEEK ACCOUNT
IF FOUND()
    DO V1
ELSE
    @ 13,21 CLEA TO 13,60
    @12,22 SAY 'ACCOUNT DOES NOT EXIST'
*EXIT
ENDIF
ELSE
IF REC = 2
    USE CUSTREC INDEX CUSTREC
    *GO TOP
    SEEK ACCOUNT
    IF FOUND()
        DO V2
    *EXIT
    ELSE
@ 13,21 CLEA TO 13,60
    @12,22 SAY 'ACCOUNT DOES NOT EXIST'
    ENDIF
ELSE
IF REC=3
    USE GUARANTO INDEX G
```



```
GO TOP
SEEK ACCOUNT
IF FOUND()
    DO V3
ELSE
    @ 13,21 CLEA TO 13,60
    @12,22 SAY 'ACCOUNT DOES NOT EXIST'
ENDIF
ENDIF
ENDIF
EXIT
ENDD

@23,20 SAY 'ANY MORE RECORD TO VIEW? (Y/N)' GET VIEW PICT
'Y'
READ
ENDD
CLOSE DATABASE
RETURN
SET TALK OFF
SET BELL OFF
SET SCORE OFF
SET STAT OFF
SET ECHO OFF
SET COLO TO W+/B,R,G
```


CLEAR

DO WHILE .T.

CHOSE = SPACE (1)

CLEA

@ 5,5 TO 22,65 DOUBL

@ 8,10 TO 20,60

@ 6,25 SAY " AMENDMENT SUB-MENU "

@ 10,20 SAY ' {C} CALCULATION'

@ 12,20 SAY "{A}. AMENDMENT OF RECORD"

@ 14,20 SAY "{D} DELETION OF RECORD "

@ 16,20 SAY "{V}. VIEWING OF RECORD"

@ 18,20 SAY "{R}. RETURN TO MAIN MENU"

@ 21,10 SAY "ENTER THE FIRST LETTER FOR YOUR CHOSE

{C,A,D,V,R}:- "GET CHOSE PICT "@!"

READ

DO CASE

CASE CHOSE = 'C'

DO PASS5

CASE CHOSE = "A"

DO PASS4

CASE CHOSE = "D"

DO PASS3

CASE CHOSE ="V"

DO VIEW

CASE CHOSE ="R"

CLEAR

EXIT

ENDCASE

ENDDO

RETURN

***** PROGRAM TO AMEND RECORDS *****

CLEA

@7,19 TO 22,44 DOUB

@9,21 SAY 'AMENDMENT OF RECORDS'

@10,21 TO 10,40

@11,22 SAY "WHICH OF THE RECORDS?"

@13,22 SAY '1. LEDGER '

@15,22 SAY "2. CUSTOMER'S RECORD"

@17,22 SAY "3. GUARANTOR'S RECORD"

@19,22 SAY "4. TRANSACTION"

REC = 0

@21,22 SAY 'CHOOSE 1-4 ABOVE'

@21,39 GET REC PICT '9'RANGE 1-4

READ

CLEA

DO WHILE .T.

IF REC = 1

DO AMENDLEDG

ELSE

IF REC = 2

DO AMENDCUST


```

        ELSE
    IF REC=3
        DO AMENDGRAN
            ELSE
    IF REC=4
        DO AMENDTRAN
ENDIF
    ENDIF
    ENDIF
    ENDIF
EXIT
ENDD
CLOSE DATABASE
RETURN
*****          PROGRAM      TO      DELETE      RECORDS
*****
ACCOUNT=0
STORE SPACE(1) TO DEL
DEL = .T.
    DO WHILE DEL
ACCOUNT=0
CLEA
@12,21 TO 14,53
@13,22 SAY "ENTER ACCOUNT NUMBER" GET ACCOUNT
READ
CLEA

```



```
@9,19 TO 18,44 DOUB
@11,22 SAY "WHICH OF THE RECORDS?"
@13,22 SAY '1. LEDGER '
@15,22 SAY "2. CUSTOMER'S RECORD"
@17,22 SAY "3. GUARANTOR'S RCORD"
REC = 0
@19,22 SAY 'CHOOSE 1-3 ABOVE'
@19,39 GET REC PICT '9' RANGE 1,3
READ
IF REC > 3
  LOOP
ENDIF
CLEA
DO WHILE .T.
  IF REC = 1
    USE LEDGER INDEX LEDGER
    GO TOP
    SEEK ACCOUNT
    IF FOUND()
      DO V1
      EXIT
    ENDIF
  @ 13,21 CLEA TO 13,60
  @12,22 SAY 'ACCOUNT DOES NOT EXIST'
ELSE
```



```
IF REC = 2
    USE CUSTREC INDEX CUSTREC
    GO TOP
    SEEK ACCOUNT
    IF FOUND()
        DO V2
    EXIT
ENDIF

@ 13,21 CLEA TO 13,60
    @12,22 SAY 'ACCOUNT DOES NOT EXIST'
    ELSE
    IF REC=3
        USE GUARANTO INDEX G
        GO TOP
        SEEK ACCOUNT
        IF FOUND()
            DO V3
        ENDIF
    ENDIF

@ 13,21 CLEA TO 13,60
    @12,22 SAY 'ACCOUNT DOES NOT EXIST'
    ENDIF
    ENDIF
    ENDIF

EXIT
```



```
ENDD
STORE SPACE(1) TO ANS
SET COLO TO G/B+
@24,23 SAY 'DO YOU WANT THIS RECORD DELETED? (Y/N)' GET
ANS
READ
SET COLO TO W/B+
IF UPPER(ANS)='Y'
    @24,0 CLEA
    SET COLO TO R/B+*
    STORE SPACE(1) TO SURE
    @24,30 SAY 'ARE YOU SURE?' GET SURE
    READ
    IF UPPER(SURE)='Y'
        @23,1 CLEA
        @24,25 SAY 'PLEASE WAIT A MUNITE'
        DELE
        PACK
    ENDIF
ENDIF
SET COLO TO W/B+
@24,1 CLEA
@24,20 SAY 'ANY MORE RECORD TO DELETE? (Y/N)' GET DEL
PICT 'Y'
READ
ENDD
```


CLOSE DATABASE

RETURN

***** PROGRAM TO PRINT THE MONTHLY

MORTGAGE DISBURSMENT *****

GO TOP

STORE SPACE(1) TO P

R=1

C=1

STORE CTOD(' / / ') TO MONT

set colo to w/b+

CLEA

@R+11,C+18 TO R+19,C+51 DOUB

@R+12,C+20 SAY 'FEDERAL MORTGAGE FINANCE LTD.'

@R+14,C+20 SAY ' MONTHLY REPORT'

@R+16,C+20 SAY 'SEND REPORT TO PRINTER?(Y/N)' GET P

PICT 'Y'

@R+18,C+20 SAY 'ENTER DATE OF REPORT' GET MONT PICT '

/ / '

READ

IF UPPER(P) = 'Y'

SET DEVICE TO PRINTER

ENDIF

CLEA


```
@R,C+25 SAY 'FEDERAL MORTGAGE FINACE LTD.'  
@R+2,C+5 SAY 'LIST OF MORTGAGE DISBURSEMENT MADE DURING  
THE MONTH OF:'  
@R+2,C+60 SAY CMONTH(MONT)  
R=5  
@R,C SAY 'S/NO'  
@R,C+6 SAY 'NAME'  
@R,C+22 SAY 'ACCT'  
@R,C+33 SAY 'DISBURS'  
@R,C+43 SAY 'REPAYMENT'  
@R,C+55 SAY 'BALANCE'  
@R,C+66 SAY 'ARREARS'  
@R,C+75 SAY 'AGE'  
@R+1,C SAY '_____
```

```
_____  
NO=1  
DO WHILE .NOT. EOF()
```

```
@R+2,C SAY NO  
@R+2,C+13 SAY RTRIM(STR(ACCT_NO))  
@R+2,C+3 SAY TRIM(L_NAME) + ' ' + TRIM(F_NAME)  
@R+2,C+29 SAY DEBIT PICT '@.99'  
@R+2,C+42 SAY TOT_CRED PICT '@.99'  
@R+2,C+54 SAY BALANCE PICT '@.99'  
@R+2,C+64 SAY ARREARS
```


@R+2,C+75 SAY AGE_ARREA

NO=NO+1

IF R>=20

WAIT''

R=5

@R+2,C SAY NO

@R+2,C+13 SAY RTRIM(STR(ACCT_NO))

@R+2,C+3 SAY TRIM(L_NAME) + ' ' + TRIM(F_NAME)

@R+2,C+29 SAY DEBIT_PICT '@.99'

@R+2,C+42 SAY TOT_CRED_PICT '@.99'

@R+2,C+54 SAY BALANCE_PICT '@.99'

@R+2,C+64 SAY ARREARS

@R+2,C+75 SAY AGE_ARREA

NO=NO+1

ENDIF

IF R=50

EJECT

R=1

ENDIF

R=R+1

SKIP

ENDD

@24,20

WAIT

RECNO() PICT "@B999"
SET DEVICE TO SCREEN

CUSTOMERS HAS BEEN PRINTED
@20,0 CLEA

ANY KEY TO RETURN TO MENU
@21,20 SAY 'REPORT OF'

RECNO() PICT "@B999"
@21,30 SAY RECNO() PICT "@B999"

'CUSTOMERS HAS BEEN PRINTED'
@21,36 SAY 'CUSTOMERS HAS BEEN PRINTED'

PROGRAM TO END OPERATIONS
@22,20

SPACE(1) TO ENDS
WAIT + SPACE(20) + ' ANY KEY TO RETURN TO MENU'

ARE YOU SURE YOU WANT TO END
CLOSE DATABASE

'Y/N' GET ENDS
RETURN

***** PROGRAM TO END OPERATIONS *****

SPACE(1) TO ENDS
STORE SPACE(1) TO ENDS

@18,20 SAY 'ARE YOU SURE YOU WANT TO END

OPERATIONS?Y/N' GET ENDS

READ

IF UPPER(ENDS) = 'Y'

CLOSE DATABASES

* EXIT

QUIT

ENDIF

RETURN