AUTOMATION OF MANAGEMENT SERVICES

(CASE STUDY OF AJAOKUTA IRON AND STEEL COMPANY)

BY

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PGD/MCS/812/99

A PROJECT WORK IN THE DEPARTMENT OF MATHEMATICS

AND COMPUTER SCIENCE, FEDERAL UNIVERSITY OF

TECHNOLOGY MINNA

SUBMITTED TO THE POST-GRADUATE SCHOOL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE AWARD

OF

POST GRADUATE DIPLOMA IN COMPUTER SCIENCE

FEDERAL UNIVERSITY OF TECHNOLOGY

MINNA, NIGER STATE

NIGERIA

SEPTEMBER, 2001

CERTIFICATION

This project work have been read and approved as meeting the requirement of Department of Mathematics and Computer Science, Federal University of Technology Minna for the award of a post-graduate diploma in computer science.

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ACKNOWLEDGEMENT

I give the greatest thanks and appreciations to the Almighty Allah the most beneficial, for being with me throughout my course of study.

I give thanks and appreciations to my project supervisor Dr. S. A. Reju who worked relentlessly for the success of this project work. I am also grateful to all the lecturers in Maths/Computer Department for their contribution.

I also acknowledge my fellow workers in Ajaokuta Iron and Steel Company Kogi State, for all their efforts. May Allah grant you success in all your endeavours.

I wish to appreciate the contribution of my family, mostly my children who could bear the rigour throughout absenteeism from home. May God give you success too Amen.

I appreciate the assistance of my friends and well wishers who I could not mention their names may God bless you all Amen. I am grateful to you all.

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CHAPTER ONE

INTRODUCTION TO MANAGEMENT SERVICE SYSTEM

1.1   INTRODUCTION

The management services system is a system designed to support the needs of the management sector as a subsystem of the whole of the organization. It is also referred to as decision support systems. Decision support systems are a further development of Management Information Systems (MIS). The MIS evolved from a backward looking (historical) periodic reporting and accounting facility, to real time operation. Management Information Systems are primarily aimed at lower and middle management, by providing data to help with day-to-day organizing, controlling and directing activities.

Decision supports systems aim to extend computerized assistance to the strategic planning tasks of senior managers. They do this by drawing attention to underlying trends and enabling managers to construct projections and to examine the outcome to hypothetical course of action.

The Ajaokuta Steel Company Limited is an integrated iron and steel plant located at Ajaokuta in Kogi State. The contract for its establishment started in 1979 and its commissioning was in July 1983. The company is still growing and has not reached its peak. As a firm which is the backbone of our industrial revolution or awakening, there is the need for a standard or modern management techniques and procedure.

It is against this background that the researcher has decided to venture into finding such measures.

1.2 BACKGROUND OF THE STUDY

The Ajaokuta Steel Company Limited was formed on 18th September 1974 and charged with the duty of constructing and operating an integrated iron and steel plant at Ajaokuta.

The global contract for the construction of the Ajaokuta Steel Complex was awarded to Messrs V/O Tiajpromexport of USSR in July 1979. The civil works was contracted to three multi-national civil engineering construction firms. And another for project-management consultancy was awarded to a consortium made up of Pan African consultancy services and Metallurgical Engineering Consultants.

The commissioning has been in phases with the pilot commissioning being in July 1983 with the light section and bar mill; with the last being the commissioning of the Billet mill, Thermal power plant and mechanical repair shops in 1986.

Since then, there were times when Nigerians may not know of the existence of such places. These were the periods when the fluctuation rates of the company have come down so low. There is the need for the procedural control system to be designed for the management to be computer based. This is to enable transparency, consistency and safety in terms of record keeping supporting the decisions of the management.

More so, iron and steel industry is the bedrock to technological giant and the country's might in science and technology is solely on it as such a method of storage of information that is going to support long time safety is highly of a place. The change from the present system to computer base system must be at the back of whoever wants any thing good for the organization. Also that the accounting department had adopted the service of computer although not fully this research work intends to find ways to

effectively implement computer support services for the management sector of the company.

1.3 STATEMENT OF THE PROBLEM

Armed with status of the Ajaokuta Steel Company and the place of an iron and steel company in the development (Technological) of any nation, and armed with the principle of the Decision-support systems, the integration of the two remains the one of the best thing that can ever happen to the company. And this is why the research has found this commendable move to investigate and recommend how best this may be implemented for a high efficiency and effectiveness.

1.4 GOALS AND OBJECTIVES OF THE STUDY

This research has the following as its aims and objectives:

(i)   To design a decision support system for the company.

(ii)   To spearhead the computerization of the entire organization.

(iii)   To provide more effective and efficient security for managerial support system.

(iv)   To introduce Electronic Data Processing (EDP) into the organization.

(v)   To provide the organization with the up-to-date techniques of processing's.

(vi)   To reduce high reliance on printed (typed) reports and increase on-screen (on-line) enquiries.

1.5 SCOPE AND LIMITATION OF THE STUDY

This research work has as its centre of focus, the automation of management service of the Ajaokuta Steel Company. The system as the name suggests, is to serve the management level of the firm. This does not include the detail services support systems in the respective subsystems of the organization. Each subsystem is expected to function

as schedule and since management decision is not possible without the result of the various subsystems, the integration of the procedure or activity summary gets to the management level be automated. The service of this system shall be restricted only to the management level.

Although, the work is based and assumed to be for the Ajaokuta Steel Company, the researcher is of high believe that the system could be adopted and used in any organization or firm particularly of a production set-up.

Also the time allocated to this research is not adequate to allow a thorough analysis at certain stages most especially that there are few places to ask for helping hands and particularly literature review.

1.6   WHY COMPUTERS

This section intends to discuss the benefits of computerization. It is better discussed under the headings as bellows: -

(a)   Communication: Right from antiquity, communication of information is unanimous with transportation. Many have to travel from one place to another to deliver message. When the knowledge of inscription comes people were able to represent information of paper and it was only at this time that secret information could be communicated; i.e. one needed not to travel himself even if he had a secret information to sent to the other end.

Writing letter to communicate information was discovered as not the fastest way to communicate information. Researches into this, led to the invention of telephone. The short come in the telephone could not allow us abandon the postal communications. This is the fact that the two parties must be present and the lines can also be tapped. Mobile

phones were invented to enable one to communicate from anywhere or be communicated to. But this also has some limitation. Computer supports the Electronic Mail and Internet service as well as electronic data transmission all of which are the peak of communication in the world today.

(b)   Speed: The speed of computer processing is at the speed of electricity. This is a speed that has never been beaten in the history of mankind. So what could faster in processing our data and to give us the required result.

(c)   Storage and retrieval: In most offices today, rooms' infact large rooms have to be created for storing files and other documents. In an operating system in which computer is at work, the system cold be described as paperless operating system. Apart from keep up to about 1.44 MB of information on a floppy disk, the computers hard disk may keep some millions of megabytes (MB).

That apart, the retrieval of information from a computer system makes you feel as if you already have all you need sorted or selected for you at a corner and always flashed at you just as you request for them. Retrieval technique of a computer is one of the biggest achievements of men.

(d)   Accuracy: Describing the accuracy level of a computer cannot be an exaggeration. Although whatever may go wrong can definitely go wrong, computers have things in place that always check it efficiency. And so the accuracy level of it is always reliable.

(e) **Consistency:** This may go along way with accuracy. It is believed that if a computer is made to perform a specific operation for a number of times, it has been confirmed that the computer gives the same result. Unlike human that may likely get different result for as many times as he performs the task.

CHAPTER TWO

A CASE STUDY OF COMPUTERIZATION OF MANAGEMENT SERVICES

2.1   INTRODUCTION

This particular work is on phase-in conversion and since many works on conversion have not been on this kind, a particular case study is not easy to obtain. In view of this the researcher decided to consider a computerization of an engineering company, which is also a close associate of the Ajaokuta Rolling Mill.

This case study is on TELECON, an engineering company located in Mahan agar, India. The company has three divisions viz. Material Handling Equipment (MHE), Gear, and Madras divisions; it employs nearly 3300 personnel in its three divisions. In Mahan agar, it occupies nearly 200,000 square metres of land, of which nearly 40,000 square metres have been used for shop floors.

The MHE division manufactures material handling equipment and undertakes turnkey projects of material handling in a variety of areas. The Gear division manufactures, helical and worm gears boxes and couplings of various types, sizes and reduction ratios. The gear boxes manufactured by the company range from very small, weighing a few kilogrammes, to very large, weighing several tons.

The manufacturing activity of the company is located in Mahanagar and Madras. The company has branches all over the country to handle sales.

TELECON is managed by a Board of Directors consisting of four functional Directors. A detailed organisation chart of the Gear division is given below as the case study focuses primarily on the Gear division. The operational management is carried out

by four managers who are in charge works, administration and personnel, purchase, and two Deputy Managers who are in charge of Electronic Data Processing (EDP) and sales. All these functionaries report to the Joint Management Director who is the chief executive of the Gear division.

2.2 ORGANIZATION CHART FOR GEAR DIVISION

```
                            Joint Managing Director
                                     |
     ┌───────────────────────────────┼──────────────┬──────────────┬──────────────┐
     │                               │              │              │              │
Works Manager              Administration      Purchase       Design          Sal
                           And Personnel       Manager        Manager
                           Manager
  ┌──────┬──────────┬──────┬─────────────┐         │                          │
'orm  Maintenance  Central  Electronic    │        │                         EDP
:cn   Mechanical   Planning Maintenance   │        │
ssy      │           │          │         │     Stores
       Helical     Heat     Heat          │        │
       Prcn        Treatment │         Purchase  Material
       Assy                  │                   Control
                             │
                   ┌─────────┼─────────┐
                 Time     Accounts   Security
                 Officer
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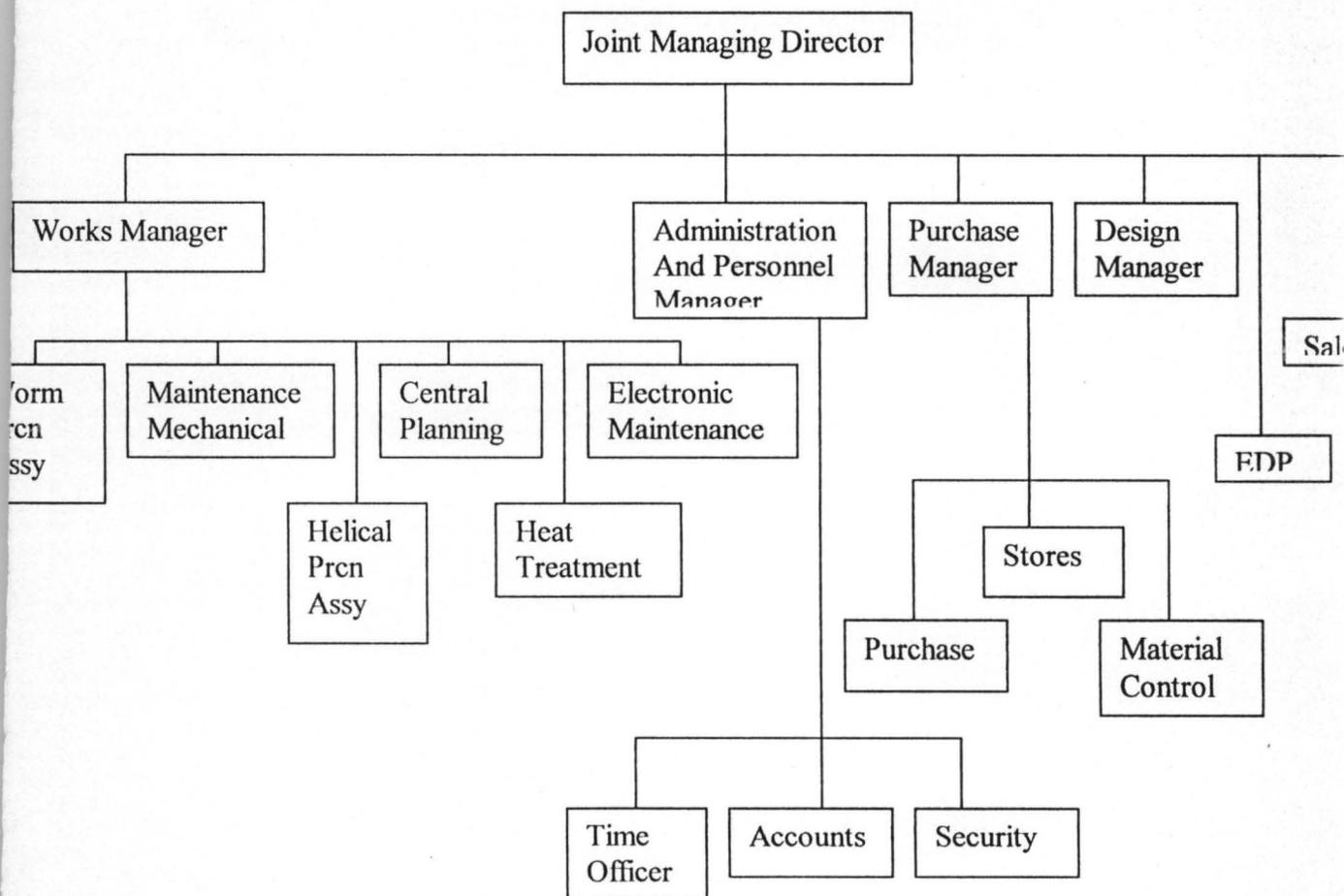
2.3 HISTORY OF EDP IN THE COMPANY

Electronic Data Processing (EDP) was introduced in August 1971 when unit record machines were installed. The following applications were taken up on the unit record machines:

(i) Pay roll

(ii) Stores accounting

(iii) Labour accounting

(iv) Financial accounting

(v) Accumulation of cost for contracting activities

The staff of the EDP cell consisted of one data processing officer, three machine operators and four key punch operators. In 1971, the turn over of the company was Rs 40 million. With the growth in sales over the next six years, the volume of transactions grew to a level beyond the capacity of unit record equipment. The company the decided to hire time on computer systems in neighboring cities for off-loading some of data processing tasks. The unit record machines were still used for data preparation. Programs were developed on system 360 for processing stores accounting, financial accounting, labour accounting, and accumulation of cost. Pay roll was processed on an IBM 1620. An outside consultant was hired to develop financial accounting package. Processing jobs on computers at neighboring cities continued for two years, during which period the availability of the computer time at these installations reduced. The computer bill for processing financial accounting, labour accounting and stores accounting on outside computers was RS 500,000 per month. Nearly 100,000 cards had to be handled every month. At this juncture, a proposal was mooted to buy an in-house computer system.

Quotations were invited from indigenous vendors. Imported systems were ruled out because of the following considerations:

(i) The total cost of imported computer system, including the customs duty made them prohibitively expensive.

(ii) The government clearances required for importing a computer system were quiet involving and would have meant a delay of a few years.

(iii) The company was not happy with the insistence by the government for getting a clearance from the union for importing a computer.

The company decided to buy an indigenously available system, called PSI system 16 with the following configuration:

(i) 128 kilobytes of memory

(ii) Four floppy drives of 1 megabyte each

(iii) Four magnetic tapes

(iv) 600 IPM printer.

The computer system did not offer a multi task operating system. However, the vendor designed a data entry package in which more than one terminal could be used.

After the installation of the in-house system, the EDP staff were strengthened to include two senior programmers and two trainee programmers to undertake the task of the software development. The applications run on the IBM system 360 were transferred to the PSI system in the next two years. In 1979, a mainframe ICL 2950 was installed in the vicinity by another organisation. Th company's labour costing was transferred on the ICL 2950 machine. Over the next few years, a lot of new hardware was added to take care of the growing need for computerization

(i) in the Gear division;

(ii) in the MHE division; and

(iii) in a sister company.

Hence, three more NELCO systems 5000 were installed during these years. These systems were interconnected to a local area network to obtain reliability of the hardware since the emphasis was on developing an on-hire system.

The Local Area Network (LAN) with the best net (Proprietary Network of the Vendor) was installed with the 40 terminals sharing hardware resources attached to the three CPUs. Except for the magnetic tape, all resources could be shared.

2.4 ORGANIZATION OF EDP

The organization of EDP as it existed up to 1978-79 has already been described. During this period, the EDP section used to report to the manager costing. In 1984, by fortuitous circumstances, the EDP section began to report directly to the Joint Managing Director as the costing manager has resigned. Since the Joint Managing Director was quite acknowledgeable about computers, he started guiding the computer activity from 1984 on wards.

Another interesting change took place in the EDP set-up in 1986 when a new company called Software Developing Inc. was floated to undertake the following activities:

(i) Development of software for new applications for all group companies

(ii) User training

(iii) Maintenance of all hardware including PCs. Software Development Inc. started functioning in April 1986.

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2.5 COMPUTER APPLICATIONS

A large number of computer applications have been developed in Telcon and broadly the following areas have been covered:

(i) Routine data processing system. These include payroll, store accounting, labour accounting and financial accounting. These are being done in a batch processing mode.

(ii) Production planning and inventory control on-line applications for Gear division as well as MHE division, which are based on Nelco 5000 Network and terminals in the two divisions.

(iii) New application areas: purchase system, computerized attendance systems etc.

(iv) Computer applications built around PCs which are either in the nature of preparation pf documents or use of spreadsheet and database software for analyses and reporting of information.

(v) Computer applications in designs which are in an initial stage of development.

(vi) Use of NC machines

(vii) An on-line sale-despatch system currently being developed in the Gear division.

2.6 OVERALL ASSESSMENT OF COMPUTERIZATION

The extent of computerization in Telcon is far more than at any average industrial unit of the same size. The investment in computer hardware and software is about Rs 10 million. Besides the routine data processing application, which has been operational for more than a decade, the company has built on-line application in the most important areas of its operation. The sophistication in the design of their applications exceeds the level of

sophistication in the hardware. Telcon has done well to develop on-line application ahead of most Indian organizations.

To get a feel for the successful implementation of all the computer applications in the company, the working of the production planning and material systems for the Gear division was studied in some detail. The system functions smoothly, i.e. files are up to date and have hardly ever been corrupted. Most problems of data error are manageable, and whenever errors are discovered, recovery is easy. Most of the users were quiet emphatic in their assertion that the computer system has been useful in several ways. However, one still notices that printed reports are more in use than on-line screens which provide more up to date information. Of course, the most important operational planning decision. Surprisingly, considerable amount of help that the existing system can provide for scheduling is not being used. The work progress inventory of the company is very high. It suggests that improvements may be possible in the scheduling practices. Thus computerization has relieved clerical drudgery, and has provided new analysis and information which were not possible in the manual system, the systems have been successfully implemented and used.

2.7   CONCLUSION ON THE CASE STUDY

The case highlights the following important elements in the process of MIS development and used: -

(i)   Acquisition of hardware and software

(ii)   Need for participative of system design

(iii)   Characteristics of on-line systems

(iv)   Factors contributing to successful adaptation of information technology

(v)   Role of end-user training and staffing of computer services.

(vi)   Impact on organizational performance.

Each organization most evolve an overall approach based on its needs, strengths and weaknesses. The case highlights that the impact of MIS is dependent on sophistication of hardware and software technology and sophistication in system design and use. If the three edges of a cube represent the three dimensions, then a point within the cube can describe the status of MIS within any organization.
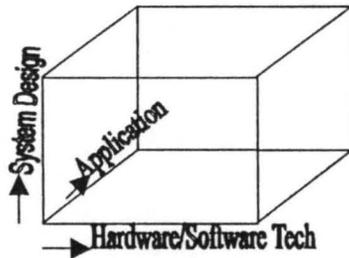

Fig 2.7.1   key dimension in overall impact of computers.

A large number of organizations continue to hover around the bottom corner of the cube . it seems quite easy t o score well on technology, which requires resources a correct assessment needs, and a proper evaluation of available hardware. To build good systems requires technically competent staff, a participative process of design, inspiration to to management for creating the necessary motivation . very sophisticated hardware is only necessary, and not sufficient for a sophisticated deign. In fact, a little handkap in hardware can be overcome by intelligent design, as as has been illustrated by the case. The most important factor is the use of information generated from various application. Convenient information of availability of information makes it easier to use. Most often, the use is restricted to operational tasks which were also being performed in the manual

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system. Use of information for decision making is perhaps the most difficult to achieve. It requires motivation and a certain capability on the part of the manager to use analysis and data. Top management interest in computers is not enough. Through an appropriate designed monitoring and feedback system, each manager must feel the need for improving performance in critical areas and must be provided with the tools and intellectual training required to use information.

2.8 ORGANIZATIONAL SET-UP OF MANAGEMENT SERVICES DEPARTMENT OF THE AJAOKUTA IRON AND STEEL COMPANY.

Since the commissioning of the Ajaokuta Iron and Steel Company in 1983, there were many establishing departments ranging from Establishment, General administration, Training, Works and Engineering. The management services department was just established in 1999. In principle or rather technically, this may not be said to a new creation but rather an attempt by the management to meet up with the challenges of technology of the new millennium.

ss The organizational setup of Ajaokuta Iron and Steel has abandoned the time hierarchy to marry the idealistic hierarchical type of organizational set-up. This is as a result of the development in the technology of information management.
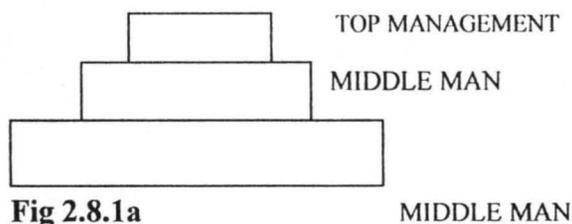
TOP MANAGEMENT

MIDDLE MAN

Fig 2.8.1a

MIDDLE MAN

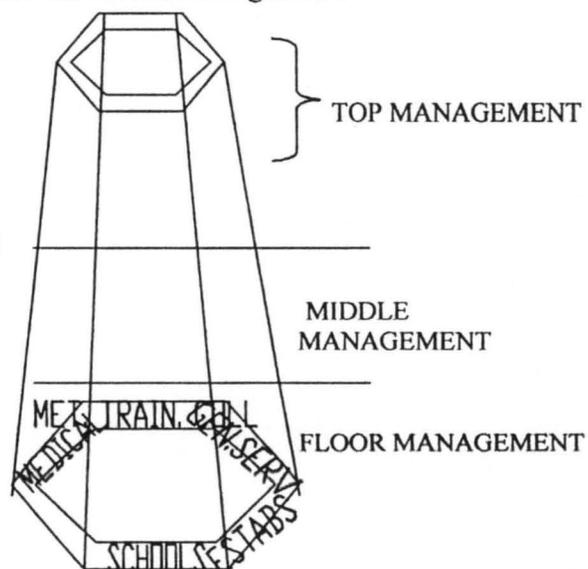TOP MANAGEMENT

MIDDLE MANAGEMENT

FLOOR MANAGEMENT

Fig 2.8.1b

The current running of the Management Services Department is represented by fig. 4.8 1a. In this case all the various departments have their respective organizational chart such that the mode of operation is not an integrated kind. No interaction between the departments except at the management level. The proposed system is to enable the whole organization to look at itself as an entity where the various departments are but mere subsystems to the main system. And by introducing computer, Management Information systems of a standard status will be put in place.

A firm can be defined as an organization establishment in which resources, control standard and operation are put together. The resources are the capital, the equipment, facilities and man. The control standards and the statement of the general objectives and the specific objectives. The operations are those tasks to be performed by the capital, the equipment, facilities and man to meet with the accomplishment of the stated general and specific objectives. Geometrically, a firm may be represented by a three dimensional figure shown below:
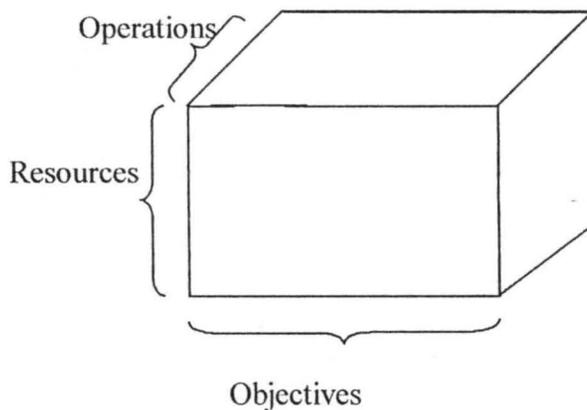

Fig 2.8.2

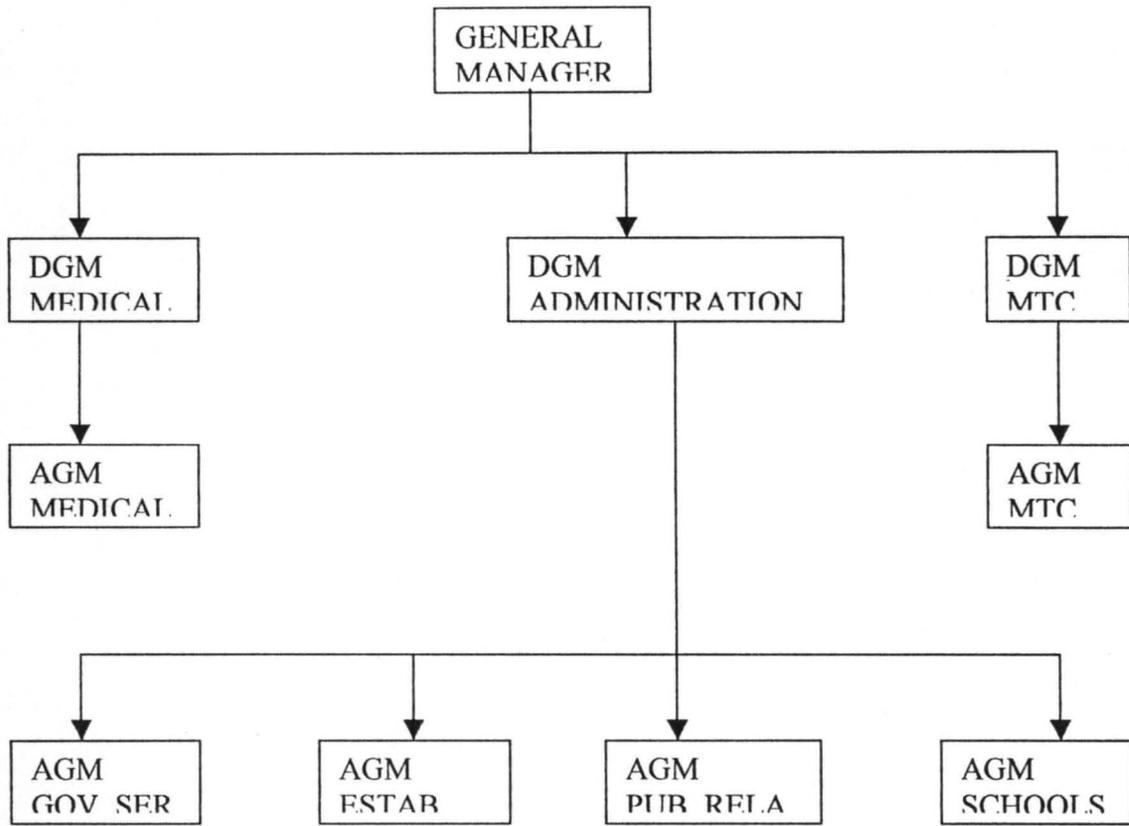## 2.9 THE ORGANIGRAM OF THE MAGEMENTY SERVICES DEPARTMENT.

Fig. 2.9.1   Organisational chart of the management level of the management services department.

CHAPTER THREE

3.0 SYSTEMS ANALYSIS AND DESIGN

3.1 INTRODUCTION

The system analysis and design in the study of the existing system in order to aid the development of any proposed system. The analysis is necessary so that the design of the new system is dependent on whatever information gathered during the analysis stage.

3.2 STUDY OF THE EXISTING SYSTEM

The management services department of the Ajaokuta Rolling Mills is in fact not been represented and the name sounds. The department from all looks things should be providing the management level with all the necessary information be it on policy, administrative purpose or whatever. The department presently consists of three main departments: Administration, Medical services and metallurgical Training Centre security, corporate planning and public relations. These other departments are headed by GL 14 officers and are all responsible to the Deputy General Manager, Management Services.

The management of the mill has initiated some other moves by making the department to look exactly what it should be by sending liason officers to other various departments to coordinate and to assist in securing the needed data for the department which shall be processed and made available for the management's use. These various departments include: - Operations, Commerce, Engineering, Real estate finance, Power and utility.

With these new dispension, there is the need for movement of "files" (Data elements) from one end to another. More so, it might be of a great interest to understand that the departments listed above are not settled within a site. The need for quick communication and data security is of great concern to both the management as well as the floor labourer of the organization. The movement of data elements from one site to another and even from one office to another within a site has been manually done.

The storage of personnel files have been on the shelf in a large room called the open registry and those in the secret registry are in cabinets and under locks. At the beginning of this rainy season there was a storm which blew one of the roofs that caused a lot of damages particularly at the invoice section of the finance department.

It is based on these factors that the researcher feels that a new system be developed for this organization.

3.3   SYSTEM SPECIFICATION

The software package considered for this system is a system that supports network as well as every languages since this is going to be a package that is use friendly most especially that the computer usage in the mill is completely absent and these will also reduced drastically the conversion cost. Consequently, the researcher has recommended a Database management package for flexibility and simplicity.

3.4 DATA FLOW DIAGRAM
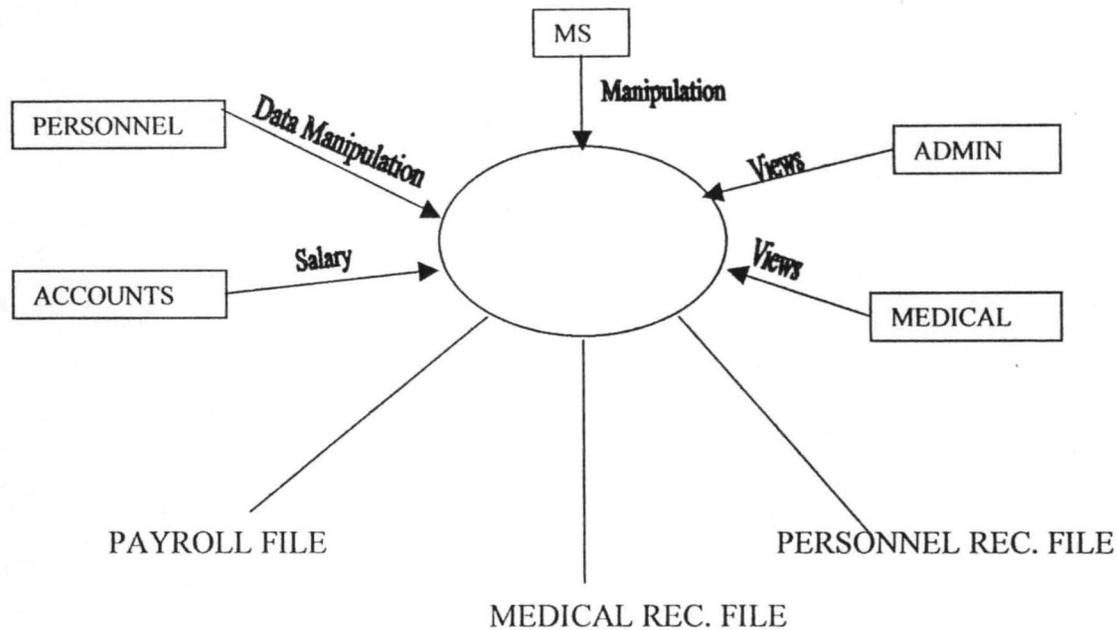
The center circle represents the resident area of Data and information. The various department such as Administration, Personnel, Medical etc. are expected to send in their captured date. The personnel and the management services departments make use of the those captured data to generate their needed information.

3.5 PROGRAM FLOW CHARTS

Flow chart is the pictorial (graphical) representation of steps taken to solve a specific problem. Although there are developed software packages, which may not necessarily be developed by us, the principle with which they solve the principle at hand is represented here:

3.6   FLOW CHART

The easiest way to achieve a good system program is to precede it with a flow chart. This is a symbolic representation of the sequence by which the program is written, it uses special symbols to do this, loops and subroutines are well represented. The flow chart of the major modules of the program is presented below:
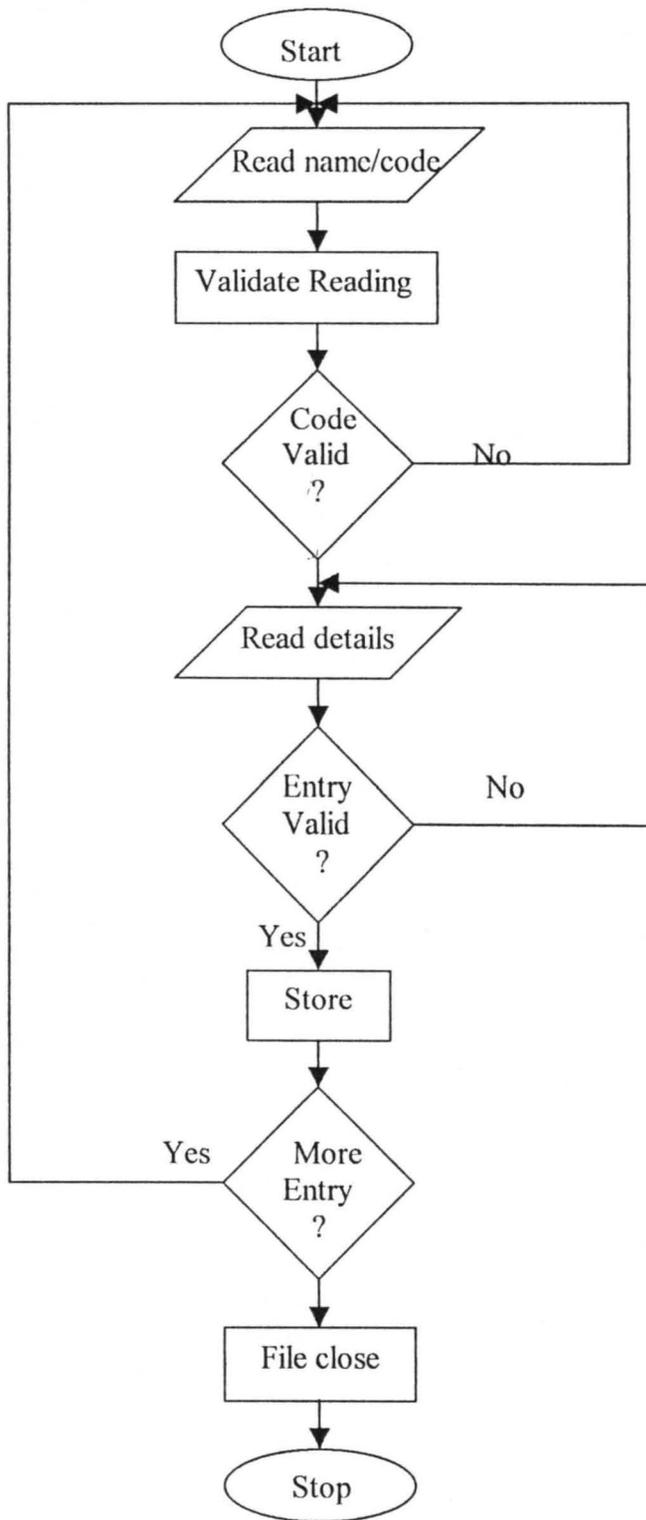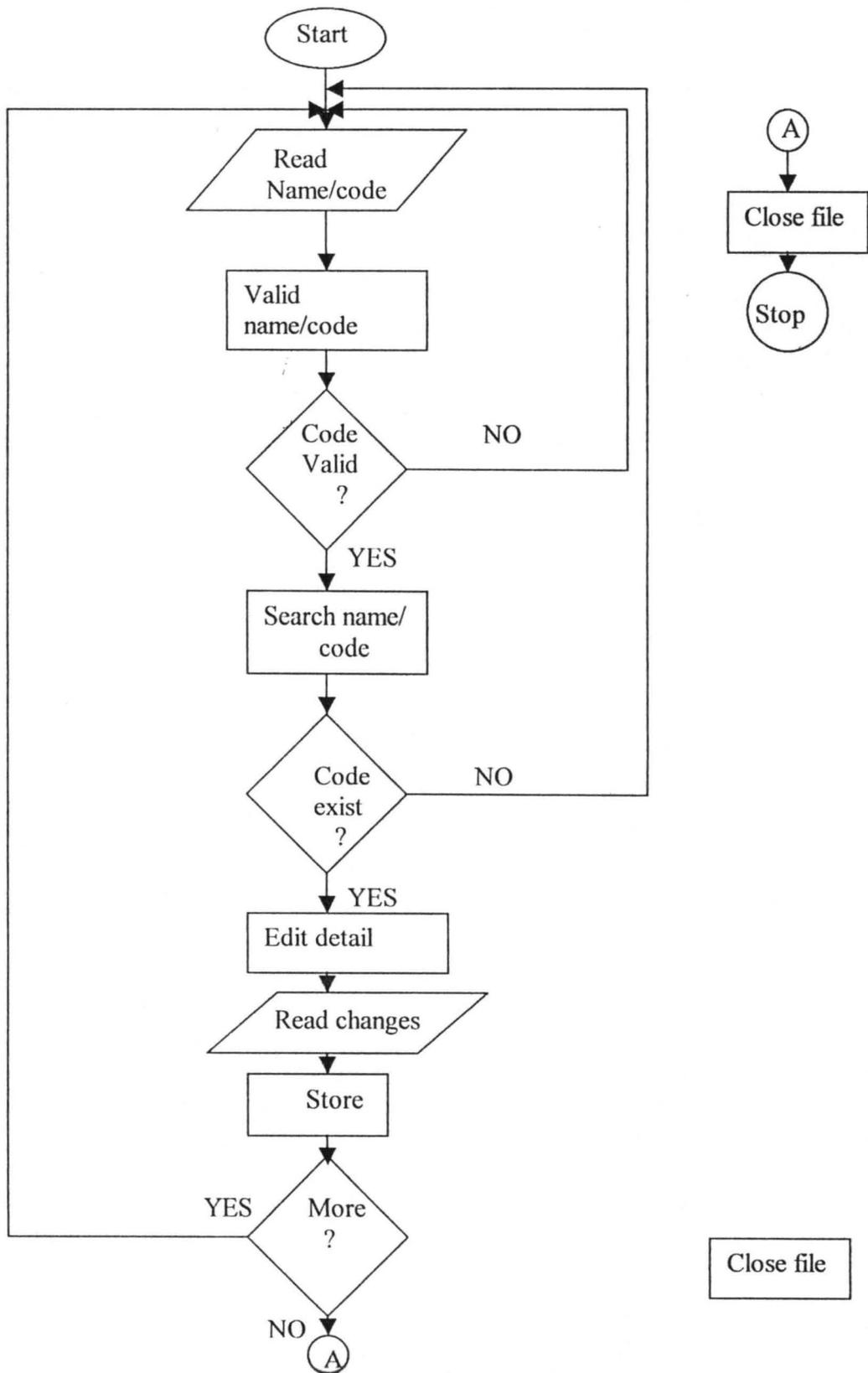
```
                    ╭─────────╮
                   (   Start   )
                    ╰─────────╯
                         │
        ┌────────────────┼──────────────────┐
        │                ▼                   │
        │         ╱─────────────╲            │
        │        ╱ Read name/code ╲          │
        │       ╱─────────────────╲          │
        │                │                   │
        │                ▼                   │
        │        ┌────────────────┐          │
        │        │ Validate Reading│         │
        │        └────────────────┘          │
        │                │                   │
        │                ▼                   │
        │            ◇ Code                  │
        │            ◇ Valid ◇──── No ───────┘
        │            ◇  ?                    
        │                │                   
        │                ▼                   
        │         ╱─────────────╲            ┐
        │        ╱ Read details   ╲          │
        │       ╱─────────────────╲          │
        │                │                   │
        │                ▼                   │
        │            ◇ Entry                 │
        │            ◇ Valid ◇──── No ───────┘
        │            ◇  ?
        │                │
        │              Yes
        │                ▼
        │        ┌────────────────┐
        │        │     Store       │
        │        └────────────────┘
        │                │
        │                ▼
        │            ◇ More
        └─── Yes ────◇ Entry ◇
                     ◇  ?
                        │
                        ▼
                ┌────────────────┐
                │   File close    │
                └────────────────┘
                        │
                        ▼
                  ╭─────────╮
                 (   Stop    )
                  ╰─────────╯
```

Fig 3.7.1 flow chart data entry

22

Fig 3.7.2 flow chart for data modification

23
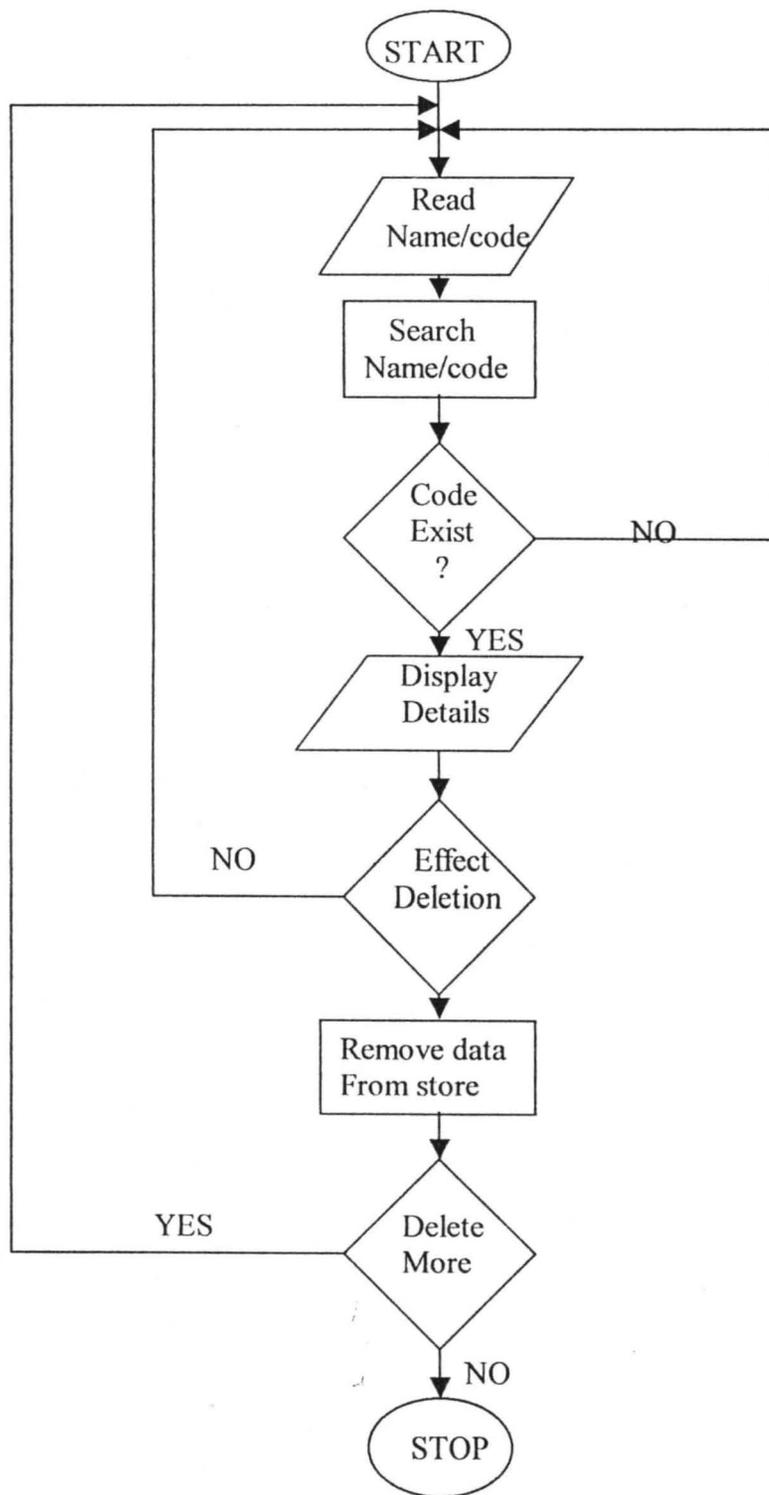
Fig. 3.7.3 flow chart for deletion of data/file

24

START

Open file

Read
File name

Print
File

YES   More
Print

NO
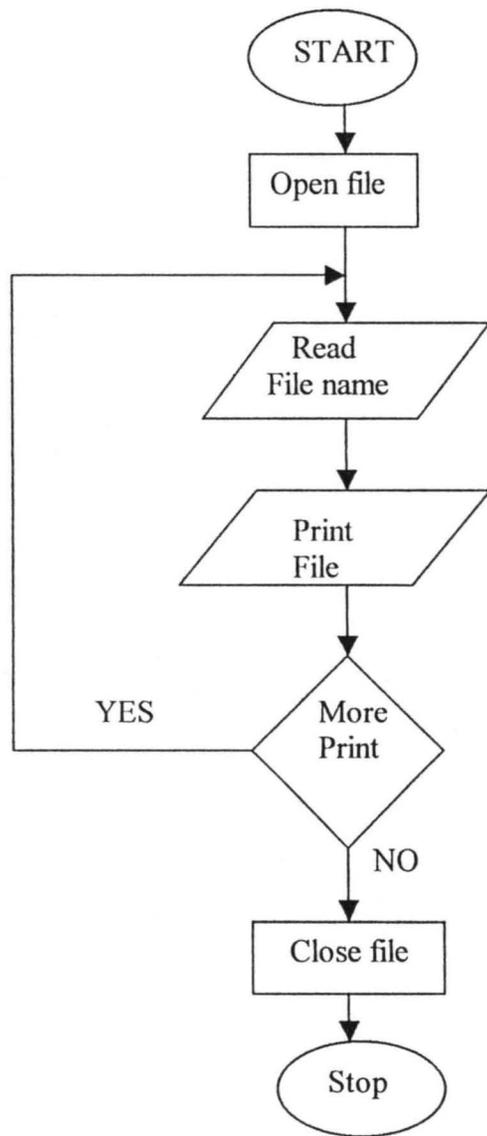
Close file

Stop

Fig. 3.7.4 Flow chart for printing of report

CHAPTER FOUR

4.0   SYSTEM IMPLEMENTATION

4.1   INTRODUCTION

Implementation can be summarily described as the process of writing the program, testing it to make sure that it works, debugging the program, installation of the system and making provision for training of the users. The program for this research work is coded with Dbase IV programming language; source code of the program is in appendix A.

Here are the output screens of the developed program.

5.2   SYSTEM CONVERSION

This is a step in system development cycle where a choice must be made out of a number of options on how best should the new system be introduced to perform the function it is designed for. The choice of method depend on a number of factors such as level of confidence on the new system, availability of computer personnel, the time factor is also considered.

A parallel change over is recommend by the researcher for this work. This will enable the user to compare the result of the two systems over a reasonable length of time. It will equally serve as a guarantee period for the user.

5.3   SYSTEM TESTING

System testing entails the verification carried out to ensure that the software developed would perform the function it is designed to do. A simplified approach is to test the system in modules and finally putting all the modules together and test. The following are the steps recommended:

(i)   Function test: - At this level of testing, the functions that make-up a module are subjected to test in a bid to ensure that they are carefully coded.

(ii)   Module test: - A number of functions constitute a module, it is a unit of program design to perform particular task. For instance in the program written, one of the modules performs modification of a personnel records and another carries out deletion of a part or the whole of a record.

(iii)   Sub-system test: - A number of modules make up a subsystem. These related modules are put together and tested. The aim is to observe the adequacy of their interaction.

(iv) System test: - All the subsystems are brought together for a test. While the test is going on notes are taken, at the end of each test a thorough debugging is carried out if any.

5.4 HARDWARE AND SOFTWARE SPECIFICATION

The minimum value of software and hardware on which the package can run are specified, below: Note that the higher versions are added advantage.

Processor	Pentium II 333MX or higher
Operating system	5.0 or higher
Disc space	3 MB
RAM	4 MB
MONITOR	CLOUR
BIOS	FULL YEAR
PRINTER	DOTMATRIX, LASERJET ETC.
D BASE IV	ASHTON-TATE CORPORATION
WINDOWS NT	4.0
WINDOWS 98	

5.5 TRAINING

The training need of an employee has been defined as the "demand of the job less the level of knowledge, understanding etc. possessed by an employer". It therefore become relevant that when an innovation is introduced into an organisation, a provision should be made to get the employee acquainted to the innovation.

In the context of this computer system development the training need can be broadly classified into two options:

(a)   The need to train the personnel on general computer appreciation and awareness in addition to the specified training on the system just developed. The option is suitable for personnel who though have the potential to learn but has no previous knowledge of computer system, it is a complete training package and it is costly.

(b)   The second option refer to the training directed to educate the user on particular application. This type is suitable for a user who is familiar with the computer system and hence requires only the operation guideline on the use of the new package.

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Brace Jovanoviah, Inc.

APPENDIX A

```
***********************************************
*This program modifies data in the personnel file***
***********************************************
set talk off
set score off
set status off
set safety off
set color of message to gr+/b
else pers_nel
index on emp_num to pers_nel
store "Y" to ans
Do while uppe(ans)="Y"
store space(4) to mnum
 clear
 @10,20 say "Enter the Employee Num. to modify" get mnum
 read
 seek mnum
 if .not. Found()
 clear
 @10,20 say "Employee Number does not exist"
 wait +space(20)+ "press any key to continue...."
  clear
  return
  else
  store surname to msurname
  store midname to mmidname
  store firstname to mfirstname
 ·store state to mstate
  store town to mtown
  store sex to msex
  store m_statu:: to mstatus
  store Date_birth to mdate_birth
  store date_1_app to mdate_1_app
  store date_p_app to mdate_p_app
  store emp_num to memp_num
  store dept to mdept
  store section to msection
  store rank to mrank
  store salary_sc to msalary_sc
  store salary_pa to msalary_pa
  store age to mage
  store h_quali to mquali
  store address to maddress
  store next_kin to mnext_kin
  store "N" to an
 do while uppe(an) ="N"
  @2,(80-17)/2 say"PERSONNEL RECORDS" COLOR *wr+/gr+
  @3,00 to 21,79 chr(178) color wr+/gr+
  @5,2 say"Employee Number :" get memp_num color gr+/b
  @5,29 say"Sex :" get msex color gr+/b
  @5,50 say"Date of birth :"get mdate_birth color gr+/b
  @6,01 to 6,78 color r+/b
  @7,2 say"Surname :"get msurname color gr+/b
  @7,29 say"midname :" get mmidname color gr+/b
  @7,53 say"First Name :"get mfirstname color gr+/b
  @8,01 to ,78 color r+/b
  @9,2 say"State :" get mstate color gr+/b
```

```
@9,25 say"Home Town :" get mtown color gr+/b
@9,53 say"Marital Status :" get mstatus color gr+/b
@10,01 to 10,78 color r+/b
@11,2 say"Date of 1st Appoint.." get mdate_1_app color gr+/b
@11,35 say "Date of present Appoint. :" get mdate_p_app color gr+/b
@12,01 to 12,78  color r+/b
@13,2 say "Age :" get mage color gr+/b
@13,29 say"Dept. :" get mdept color gr+/b
@13,50 say"Section :"get msection  color gr+/b
@14,01 to 14,78 color r+/b
@15,2 say"Rank :" get mrank color gr+/b
@15,29 say"Salary Scale :" get msalary_sc color gr+/b
@16,01 to 16,78 color r+/b
@17,2 say"Salary  per Annum :" get msalary_pa color gr+/b
@17,33 say"postal Address :" get maddress color gr+/b
@18,01 to 18,78  color r+/b
@19,2 say"Highest Qualification :" get mquali color gr+/b
@19,33 say"Next of Kin Name :"get mnext_kin color gr+/b
read
@22,(80-17)/2 say"Data ok [Y/N/Q] ?" get an pict"!"valid an$"YNQ"
read
if an="Q"
   clear
  cancel
endif
@22,10 clear to 24,70
Enddo
repl surname with msurname
Repl midname with mmidname
Repl firstname with mfirstname
Repl state with mstate
Repl town with mtown
Repl sex with msex
Repl m_status with mstatus
Repl Date_birth with mdate_birth
Repl date_1_app with mdate_1_app
Repl date_p_app with mdate_p_app
Repl emp_num with memp_num
Repl dept with mdept
Repl section with msection
Repl rank with mrank
Repl salary_sc with msalary_sc
Repl salary_pa with msalary_pa
Repl age with mage
Repl address with maddress
repl h_quali with mquali
Repl next_kin with mnext_kin
clear
@22,(80-25)/2 say "More data to modify {Y/N} ?" get ans pict "!" valid ans
read
clear
endif
enddo
*****************************************
****This program performs data entry****
*****************************************
set talk off
```

```
set score off
set   status off
set color of message to gr+/b
store"Y" to ans
 while uppe(ans) ="Y"
 store space(12) to msurname, midname, mfirstname, mstate, mtown
 store space(1) to msex
 store space(8) to mstatus
 store ctod(" /  / ") to mdate_birth, mmdate_1_app, mdate_p_app
 store space(5) to memp_num, mquali
 store space(12) to mdept, msection, mrank, msalary_sc
 store 0 to  msalary_pa
 store space(2) to mage
 store space(20) to maddress
 store space(25) to mnext_kin
 clear
 store "N" to an
 do while uppe(an) ="N"
  @2,(80-17)/2 say "PERSONNEL RECORDS" COLOR wr+/gr+
  @3,00 to 21,78 chr(178) color wr+/gr+
  @5,2 say"Employee  Number :" get memp_num color gr+/b
  @5,29 say"sex :" get msex color gr+/b
  @5,50 say"Date of Birth :"get mdate_bith color gr+/b
  @6,01 to 6,78 color r+/b
  @7,2 say"Surname :" get msurname color gr+/b
  @7,29 say"Midname :" get midname color gr+/b
  @7,53 say"Firstname :" get midname color gr+/b
  @8,01 to 8,78 color  r+/b
  @9,2 say"State :" get mstate color gr+/b
  @9,25 say"Home town :" get mtown color gr+/b
  @9,53 say"Marital Status :" get mstatu color gr+/b
  @10,01 to 10,78 color r+/b
  @11,2  say"Date of 1st Appoint. :" get mdate_1_app color gr+/b
  @11,35 say"Date  of present Appoint. :" get mdate_p_app color gr+/b
  @12,01 to 12,78 color r+/b
  @13,2 say"Age :"get mage color gr+/b
  @13,29 say"Dept. :" get mdept color gr+/b
  @13,50 say"Section :"get msection color gr+/b
  @14,01 to 14,78 color r+/b
  @15,2 say"Rank :" get mrank color gr+/b
  @15,29 say"Salary Scale :"get msalary_sc color gr+/b
  @16,01  to 16,78 color r+/b
  @17,2 say"Salary Per Annum :" get msalary_pa color gr+/b
  @17,33 say"postal Address :"get maddress color gr+/b
  @18,01 to 18,78 color r+/b
  @19,2 say"Highest Qualifiction :"get mquali color gr+/b
  @19,33 say"Next of kin Name :"get mnext_kin color gr+/b
  @22,(80-17)/2 say"Data ok [Y/N] ? "get an pict "!" valid an $ "YNQ"
  read
  if an="Q"
     clear
    cancel
  endif
  @22,10 clear to 24,70
 nddo
 22,(80-25)/2 say"More data Entries (Y/N) ?"get ans pict"!" valid ans $
 ead
```

```
clear
Enddo
****************************************************
*This program display personnel record        **
*report1                                       **
****************************************************
set talk off
set score off
set status off
set safety off
set device to screen
*set color of message to r+/b
use pers_nel
index on emp_num to pers_nel
store  "Y"  to ans
Do while  uppe(ans) ="Y"
  store space(4) to mnum
  clear
  @10,20 say"Enter the Empoyee Num. to modify"get mnum
  read
  seek mnum
  if .not. Found()
  clear
  @10,20 say"Employee Number does not exist"
  wait +space(20)+"press any key to continue..."
  clear
  return
  else
  set device to printer
  @2,(80-24)/2 say"PERSONNEL REPORT SECTION" COLOR +wr+/gr+
  @4,02 say replicate("-",78) color r+/b
  @5,2 say"Employee Number :" color wr+/b
  @5,21 say emp_num color gr+/b
  @5,29 say"sex :" color wr+/b
  @5,35 say sex color gr+/b
  @5,50 say"Date of Birth :" color wr+/b
  @5,66 say dtoc(date_birth) color gr+/b
  @6,02 say replicate("-",78) color r+/b
  @7,2 say"surname :" color wr+/b
  @7,12 say surname color gr+/b
  @7,29 say"Midname :"color wr+/b
  @7,38 say"midname color gr+/b
  @7,53 say"First Name :" color wr+/b
  @7,65 say midname color gr+/b
  @8,02 say replicate("-",78) color r+/b
  @9,2 say"State :"color wr+/b
  @9,10 say state color gr+/b
  @9,25 say"Home Town :" color wr+/b
  @9,37 say town color gr+/b
  @9,53 say"Marital Status :" color wr+/b
  @9,69 say m_status color gr+/b
  @10,02 say replicate("-",78) color r+/b
  @11,2 say"Date of First Appoint. :" color wr+/b
  @11,25 say dtoc(date_1_app) color gr+/b
  @11,35 say"Date of present Appoint. :"color wr+/b
  @11,61 say dtoc(date_p_app) color gr+/b
  @12,02 say replicate("-",78) color r+/b
```

```
@13,2 say"Age :" color wr+/b
@13,8 say age color gr+/b
@13,29 say"Dept. :" color wr+/b
@13,37 say dept color gr+/b
@13,53 say"Section :" color wr+/b
@13,59 say section color gr+/b
@14,02 say replicate("-",78) color r+/b
@15,9 say rank color gr+/b
@15,29 say"Salary scale :" color wr+/b
@15,44 say salary_sc color gr+/b
@16,02 say replicate("-",78) color r+/b
@17,2 say"Salary per Annum :" color wr+/b
@17,21 say str(salary_pa,10,2) color wr+/b
@17,33 say"Postal Address :" color wr+/b
@17,50 say address color gr+/b
@18,02 say replicate"-",78) color r+/b
@19,2 say"Highest Qualification :" color wr+/b
@19,26 say h_quali color gr+/b
@19,33 say"Next of Kin Name :" color wr+/b
@19,52 say next_kin color gr+/b
@20,02 say replicate("-",78) color r+/b
set device to screen
@22,(80-28)/2 say"More records to display {Y/N} ? " get ans pict "!" va
read
clear
endif
****************************************************
* This program deletes data from personnel file **
****************************************************
set talk off
set score off
set status off
set safety off
set color of message to gr+/b
use pers_nel
index on emp num to per_nel
store "y" to ans
Do while uppe(ans) ="Y"
  stre space(4) to mnum
  clear
  @10,20 say "Enter the Employee num. to modify" get mnum
  read
  seek mnum
  if .not. found()
  clear
  @10,20 say "Employee Number does not exist "
  wait +space(20)+"press any key to continue..."
  clear
  return
  else
  store surname to msurname
  store midname to mmidname
  store firstname to mfirstname
  store state to mstate
  store town to mtown
  store sex to msex
  store m_status to mstatus
```

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```
 store Date_birth to mdate_birth
 store date_1_app to mdate_1_app
 store date_p_app to mdate_p_app
 store emp_num to memp_num
 store dept to mdept
 store section to msection
 store rank to mrank
 store salary_sc to msalary_sc
 store salary_pa to msalary_pa
 store age to mage
 store h_quali to mquali
 store address to maddress
 store next_ki to mnext_kin
 store "N" to an
do while upp(an) ="N"
 @2,(80-17)/2 say "PERSONNEL RECORDS" COLOR *wr+/gr+
 @3,00 to 21,78 chr(178) color wr+/gr+
 @5,2 say "Employee Number :" + memp_num color gr+/b
 @5,29 say "sex :" + msex color gr+/b
 @5,50 say "Date of Birth :"+ dtoc(mdate_birth) color gr+/b
 @6,01 to 6,78 color r+/b
 @7,2 say "Surname :" + msurname color gr+/b
 @7,29 say "Midname :" + mmidname color gr+/b
 @7,53 say "First Name :" + mmidname color gr+/b
 @8,01 to 8,78 color r+/b
 @9,2 say "State :"+mstate ccolor gr+/b
 @9,25 say"Home Town  :" +mtown color gr+/b
 @9,53 say "Marital Status :" +mstatus color gr+/b
 @10,01 to 10,78 color r+/b
 @11,2 say "Date of 1st Appoint. :" +dtoc(mdate_1_app) color gr+/b
 @11,35 say"Date of present Appoint. :" +dtoc(mdate_p_app) color gr+/b
 @12,01 to 12,78 color r+/b
 @13,2 say"Age :" +mage color gr+/b
 @13,29 say"Dept. :" +mdept coor gr+/b
 @13,50 say "section :" +msection color color gr+/b
 @14,01 to 14,78 color r+/b
 @15,2 say "Rank :" +mrank color gr+/b
 @15,29 say"Salary scale :" +msalary_sc color gr+/b
 @16,01 to 16,78 color r+/b
 @17,2 say"salary per Annum :" +str(msalary_pa,10,2) color gr+/b
 @17,33 say"Postal Address :" +maddress color gr+/b
 @18,01 to 18,78 color r+/b
 @19,2 say"Highest Qualification :" +mquali color gr+/b
 @19,33 say"Next of Kin Name :" +mnext_kin color gr+/b
 @22,(80-55)/2 say"Are you sure want to delete this record [Y/N/Q] ?"
 read
 if an ="Q"
    clear
   cancel
 endif
 @22,10 clear to 24,70
nddo
ele
ack
lear
22,(80-28)/2 say"More data to delete {Y/N} ?" get ans pict"!" valid ans
ead
```

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```
clear
endif
Enddo
set talk off
set color of message to gr+/gr
set color of higlight to w/n
set color of box to n/w
clear
@23  say "AJAOKUTA STEEL COMPLEX"
@23 SAY"------------------------"
*/.,mnbine popup main from 7,25 to 15,50
Line bar 1 of main prompt "    Main menu-"skip
Line bar 2 of main prompt "--------------------"
Line bar 3 of main prompt "Staff Record creation"
Line bar 4 of main prompt "Modify Staff Record(s)"
Line bar 5 of main prompt "Delete Staff Record(s)"
Line bar 6 of main prompt "Report Generation"
Line bar 7 of main prompt "Exit Main Program"
selection popup main do main_sele

procedure main_sele
case
case bar() =3
  do personel
case bar()=4
  do modify
case bar()=5
  do delete
case bar()=6
  do rept
case bar()=7
deactivate popup
clear
endcase
return
procedure rept
line popup rep from 13,49 to  20,70
line bar 1 of rep prompt "    report menu"skip
line bar 2 of rep prompt "--------------"skip
line bar 3 of rep prompt "Report 1" message"This option displays details of
line bar 4 of rep prompt "Report 2" mesage "This option displays details of
line bar 5 of rep prompt "Report 3" message"This option displays list of al
line bar 6 of rep prompt "Exit to main menu"
selection popup rep do rep_sele
save screen to tty
procedure rep_sele
 case
case bar()=3
    do report1
case bar()=4
    do report2
case bar()=5
    do report3
case bar()=6
deactivate popup
clear
endcase
```

```
return
set talk off
clear
use pers_nel
@2,(64-39)/2 say Ajaokuta Steel company Limited
@3,(64-12)/2 say "STAFF LIST"
@4,(64-39)/2 say replicate("-",39)
do head
m=9
i=1
Do while .not. eof()
   @m,1 say I pict "999"
   @m,11 say Emp_num
   @m,28 say surname
   @m,41 say midname
   @m,54 say firstname
   skip
   m=m+1
   i=i+1
   if m>24
      m=9
      wait"   "
      @6,00 clear to 24,78
      do head
    endif
   Enddo
  procedure head
    @6,1 say"S/no"
    @6,7 say"Employee number"
    @6,28 say"surname"
    @6,41 say"midname"
    @6,54 say"First Name"
    @7,1 say replicate("-",62)
  return
  return
**************************************************
*This program modifies data in personnel file**
**************************************************
set talk off
set score off
set status off
set safety off
set color message to gr+/b


while uppe(ans) ="Y"
store space(4) to mnum
clear
@10,20 say"Enter the Employee Num. to modify" get mnum
read
seek mnum
if .not. Found()
   clear
   @10,20 say"Employee Number does not exist"
   wait +space(20)+"press any key to continue..."
   clear
   return
```

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```
     else
     store surname to msurname
     store midname to mmidname
     store firstname to mfirstname
     store state to mstate
     store town to mtown
     store sex to msex
     store m_statu: to mstatus
     store Date_birth to mdate_birth
     store date_1_app to mdate_1_app
     store date_p_app to mdate_p_app
     store emp_num to memp_num
     store dept to mdept
     store section to msection
     store rank to mrank
     store salary_sc to msalary_sc
     store salary_pa to msalary_pa
     store age to mage
     store h_quali mquali
    .store address to maddress
     store next_kin to mnext_kin
     store "N" to an
  do while uppe(an) ="N"
   @2,(80-17)/2 say"PERSONNEL RECORDS"COLOR *WR+/GR+
   @3,00 to 21,79 chr(178) color wr+/gr+
   @5,2 say"Employee Number :" get memp_num color gr+/b
   @5,29 say"sex :" get msex color gr+/b
   @5,50 say"Date of Birth :" get mdate_birth color gr+/b
   @6,01 to 6,78 color r+/b
   @7,2 say"Surname :"  get msurname color gr+/b
   @7,29 say "Midname :"  get midname color gr+/b
   @7,53 say"First Name :" get midname color gr+/b
   @8,01 to 8,78 color r+/b
   @9,2 say "State :" get  mstate colorgr+/b
   @9,25 say"Home Town :" get mtown color gr+/b
   @9,53 say"Marital Status :" get mstatus  color gr+/b
   @10,01  to 10,78 color r+/b
   @11,2 say "Date of 1st Appoint. :" get mdate_1_app color gr+/b
   @11,35 say "Date of Present Appont. :" get mdate_p_app color gr+/b
   @12,01 to 12,78 color r+/b
   @13,2 say"Age :" get mage color gr+/b
   @13,29 say "Dept. :" get mdept color gr+/b
   @13,50 say"Section :" get msection color gr+/b
   @14,01 to 14,79 color   r+/b
   @15,2 say"Rank :" get mrank color gr+/b
   @15,29 say"Salary Scale :" get  msalary_sc color  gr+/b
   @16,01  to 16,78 color r+/b
   @17,2 say"Salary per Annum :" get msalary_pa color  gr+/b
   @17,33 say"Postal Address :" get maddress color gr+/b
   @18,01 to 18,78 color r+/b
   @19,2 say"Highest Qualification :" get  mquali color gr+/b
   @19,33 say "Next of kin Name :" get mnext_kin color gr+/b
   read
   @22,(80-17)/2 say"Date ok [Y/N/Q] ? " get an pict "!" valid an $ "YNQ"
   read
   if an ="Q"
      clear
```

```
      cancel
   endif
   @22,10 clear to 24,70
Enddo
repl surname with murname
Repl midname with mmidname
Repl firstnme with mfirstname
Repl state with mstate
Repl town with mtown
Repl sex with msex
Repl m_status with mstatus
Repl Date_birth with mdate_birth
Repl date_1_app with mdate_1_app
Repl date_p_app with mdate_p_app
Repl emp_num with memp_num
Repl dept mdept
Repl section with msection
Repl rank with mrank
Repl salary_sc with msalary_sc
Repl salary_pa with msalary_pa
Repl age with mage
Repl address with madresss
Repl h_quali with mquali
Repl next_kin with mnext_kin
clear
@22,(80-25)/2 say"More  data to modify{Y/N} ?" get ans pict"!"valid ans $"YN"
read
clear
endif
Enddo

End
```