MANAGEMENT INFORMATION SYSTEM (MIS) AS A TOOL FOR BILLING.
"A CASE STUDY OF NITEL LIMITED NORTH WEST ZONE KADUNA"

BY

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PGD/MCS/421/97

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i
TITLE PAGE

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GLORIA AMINA ONEKUTU
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PROJECT SUBMITTED TO THE DEPARTMENT OF MATHEMATICS-STATISTICS AND COMPUTER SCIENCE, IN PARTIAL FULFILMENT OF THE AWARD OF POST-GRADUATE DIPLOMA IN COMPUTER SCIENCE, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA.

DEDICATION

roject is dedicated to my parents SQD. LDR. J. L. Adama & Mrs. Rose
Adama.

CERTIFICATION

This project titled " MANAGEMENT INFORMATION SYSTEM AS A
TOOL FOR BILLING. A CASE STUDY OF NITEL LIMITED NORTH
WEST ZONE KADUNA has been read and approved to have met the
requirement for the award of Post Graduate Diploma in Computer Science
of Federal University of Technology, Minna.

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EXTERNAL EXAMINER   **DATE**

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TABLE OF CONTENT

CONTENTS   PAGE

Chapter Four

Chapter Five

Appendix

References

ABSTRACT

Management Information System (MIS) is a vital tool used in the billing of subscribers in NITEL; where billing is the calculation of client's obligation and presentation of same to the client with a demand for a subscriber to pay the amount stated. This project is aimed at solving the billing problem of MIS department of NITEL LIMITED North -West Zone, Kaduna; which will subsequently be a reference material to other zones in the country.

In specific terms, this project work attempts to study the existing system of billing in NITEL LIMITED, identifying the problems associated with the existing system and design a new system that will eliminate the problems of the current system so as to achieve accurate billing of customers.

In this respect, the new system is developed using Dbase IV that is one of the database management system. Due to the objectives of this new system, Data can be inputed at intervals to produce updated and accurate bills at the right time.

CHAPTER ONE

GENERAL INTRODUCTION

1.1   PREAMBLES

Management Information System (MIS) is an organised collection of people, procedures, database, and devices used to provide routine information to managers and decision makers. The importance of information to management has being extensively studied and has being described as the most strategic resource to Organisation as their lifewire. Without acquisition and managing of information, no Organisation can stand the test of time. The capacity of an Organisation to identify, acquire, manage and use information in quest of attaining the stated objectives, determines the success especially in the present world of information technology which transforms the world into globalvillage. All the major stages of operation of an Organisation resources, identification, gathering, processing, disposing of goods and services as well as feed-back require the input of information to be successful which also leads to the attainment of Organisational objectives. It is also needed for efficient services as well as for marketing of services. Availability of information as input also helps in decision making.

Therfore, for information to be of expected benefits to an Organisation, it must be well managed; That is, some kind of system that filters, condenses, stores and transmits information in accordance with the organisation's objectives which must be evolved and sustained. In other words, Information management can be defined as the planning and co-ordinating of information resources icluding personnel, equipment, funds and technology, data processing, word processing, telecommunication, records, office systems, external information services, information related expenditure as well as human expertise all in line with managerial goals.

Many Organisation today have special units setup to take charge of information management and such units are regarded as strategic to their operations. The management information system is knowledgeable in information matters and in terms of information resources, their nature, diversity, application, limitation and cost. Management Information system (MIS) in an Organisation therefore can be as complex and demanding as managing an organisation itself and encompasses all sort of information such as telephone billing an the like.

Presently in Nigerian Telecommunications limited (NITEL LTD), management information system is used as a tool for billing customers. NITEL

among other governmental agencies enjoys privatization and full commercialization, which means the re organisation of enterprises, wholly or partly owned by the Federal Government in which such commercialized enterprises shall operate as profit-making ventures without sub-vention from the Federal Government

With commercialization, NITEL (LTD) expects, "give and take" process, that is, to say, after NITEL renders services to the Public/Government, she expects these groups to settle their bills so that NITEL may be able to intensify it's relentless efforts of serving the nation; by using the management information system (MIS) department effectively.

Unfortunately, people, government and even business organisation are not responding sufficiently to the arrangement. It is due to this act of non settlement of bills, that NITEL embarked on the use of management information system (MIS) for printing bills for subscribers who default or not.

1.2   BACKGROUND OF THE STUDY

Management information system is a vital tool used in the billing of subscribers in NITEL (LTD). This billing is calculated using the meter reading, which shows the amount, the subscriber incured; MIS also helps to check the

performance or capability of each telephone lines.

Consequently, there is the need for an effective management and maintainance of the billing system to provide adequate information system that could aid the management of NITEL in taking effective decision.

It is well known that computer has the capacity to process large data within a very short time and with greater degree of accuracy. The recognition of this fact is evident in the increase application of computer technology into every facet of business operation in NITEL (LTD) especially in the billing of subscribers aspect.

1.3   STATEMENT OF PROBLEM

The increase in operation, departmentalisation and work specialisation with their attainment problems of communication, management information and decision making brought about the attempt of NITEL (LTD) to computerize some of it's operation especially in the aspect of billing. However, commendable as this effort is, it is yet to achieve the reason for which it was established. This is evident by the fact that:

*   Some of the work is still being done manually.

*   The computer system units are not adequate.

* There is also a problem of accessibility to the original vendors of the existing system when any problem occurs.

* There is the problem of fraudulent practices or manipulations by the exchange staff.

* Management information system department are not situated in the territorial offices but only in zonal headquarters.

* Increasing complexity of the different subscribers (private lines, business lines, government lines and NITEL telephone lines).

* Increasing need for total realisation of money from subscribers, who consumes the services of the organisations.

It is very embarrasing and fraustrating when an extra ordinary bill is given to a subscriber due to the fact that improper entry has been due to human error or mischieve.

1.4 OBJECTIVE OF THE STUDY

Against the background that a sure way to success is the use of a well articulated information technology(IT) system, Organisation and the observed constraints of the system in use; This study intends to design a new user-friendly

package that will be relevant to the operation of NITEL LIMITED in the aspect of billing with the view to reducing, if not eliminate the difficulties and problems encountered by the users of the system and enhance their efficiency and productivity while meeting up the set down organisational target and objective.

Specifically, this study will try to look at the followings:-

* The technological development of management information services to both NITEL and the subscribers.

* The relationship between top management and junior staff of MIS department and also to see the different duties that are being performed by each of the staff of the department.

* How MIS is used for billing, it's problems, prospects and offer some useful suggestions for possible improvement.

* Design an application software required for effective use which will then take care of all problems associated with billing.

* Improving on the laid down foundation and foresight for other development that would follow later in the years ahead.

1.5   SCOPE AND LIMITATIONS OF THE STUDY

Management information system (MIS) as a tool for billing in NITEL LTD is a wide and broad topic, but the study is limited to one zone(Kadun zone) of NITEL LTD within the period of 1993-1997. The study being limited to one zone, will bring out all the facts needed since the same duty is carried out in the other different zone.

The limitations of this study include the following:-

* Finance - Due to high inflationary rate in the society, the cost of moving arround to collect and collate data for this study and to printing of the work, has in its way affected the study.

* Although there is an existing system which should have serve to a greater extent as the basis for this study, MIS officials in NITEL did not release enough information in the course of my enquiry.

* The time allocated seems not enough as the student has to ration the time available with other official engagement, moreso, that the supervisor has a good number of both postgraduate and udergraduate for supervion, and other academic activities.

Despite the above stated limitations, the study has tried as much as possible to make the study stands the taste of _ time.

1.6 METHODOLOGY

In view of the nature of this study, this sub-topic in this chapter deals with the method used in collecting data and description of information and the materials for the project write-up

POPULATION DESCRIPTION

The data used in this study are divided into three groups namely:-

*   Private (Telephone lines for private use).

*   Business (Telephone lines for business use).

*   Government (Telephone lines for Government use).

The relevant data for this study are the numbers of allocations and cessations as kept in the MIS department. This data are extracted from records on subscribers which indicate the type of use.

SAMPLE METHOD

Due to the topic of this study which is using "Management information system (MIS) for billing in an Organisation", a case study of NITEL LIMITED; The writer concluded that the study should comprise of sampling the opinion of

senior manger (zonal office, Kaduna), the mangers (who are the various departmental heads), officers, programmers and lecturers of Nitel training school Kano.

METHOD OF DATA COLLECTION

The data for this study was collected from monthly bills report(1993-1997), where details of every transaction made is printed and kept by the help of back-up-tape (magnetic tapes) for this same monthly bills, where the tape is mounted and information so needed is extracted. With respect to the nature of this study, data (information) were obtained through personal interview from the heads of department (senior manager, managers, who are system analyst). In order to facilitate the information obtained questions were prepared in advance and booking of appointment were made in order to avoid wasting of time.

Related literature were also examined from secondary data obtained. These literature sources were newspapers, textbooks, NITEL journals.

There were also primary data obtained from NITEL and the are known as DATA SET. The said data are collected through billing inputs sent to MIS department for processing. This billing inputs are of different types among which is the customer information or the customer name and address, cutomer

type, of service rendered (for example, new installation, change of address and cessation)

Personal interview was also carried out at the NITEL fault office where customers (Private, Business, Government) brought complaints.

CHAPTER TWO

LITERATURE REVIEW

2.1   PREAMBLES

Management Information System (MIS) is an organised collection of people, procedures, database, and devices used to provide routine information to managers and decision makers.

The operational efficiency or effectiveness of management information system depends on the quality of information generated, hence other functional areas are typically supported by management information system.

Marion Harper in her comment on management information system put it this way. "To manage a business well is to manage it's future and to manage the future is to manage information". Managers most be future-oriented, That is, they must anticipate changes and forecast the direction and intensity of these changes.

One time General Manager, North-west zone, Kaduna, Engineer A. E Iyamabo was quoted appealing to NITEL subscribers to please insist on settling their bills, and added " our numerous subscribers need to be educated on issues of non-settlement of their biils, we can not continue serving them, because

Government is not maintaining or funding NITEL projects any more". This was reported in an in-house Newspaper, the NITEL News letter.

Professor Buba Bajoga, who is the current Managing Director and Chief Executive said the year 1995 (Annual report) has gone down in the annals of this country as a unique one in the telecommunications industry. Apart from the commercialization of the company, the year marked the tenth anniversary of the commencement of Nitel and the use of mangement information services in providing network telecommunication services for Nigeria. He went further to say that this event was indeed a landmark, not only for our company, but also for the entire nation. He said that NITEL's goal still remains the provision of a reliable and efficient telecommunications systems through the expansion and modernization of the management information services network.

The one time minister for communications, Major General Adeniyi Tajudden Olanrewaju, during the tenth anniversary said that MIS policy thrust will require enormous expenditure and this demands them to collect all monies for their services. The Managing Director and Minister had a joint view about the improved revenue generation and collection. They employed all operations staff in the management information system (MIS) department to update customer's record at the exchange level so that bills reach customers quickly.

The Managing Director drew the attention of the entire staff to:-

1.   The timely flow of information is vital to effective cost management and that management information systems often make use of computer to store and retrieve vast amount of data. And also many management problems are relatively short lived, however, traditional methods of building large management information system may result in the delivery of "too much, too late information". That the attributes of good decision making by providing quality of information rather than quality of data should be enhanced.

2.   The new telecommunication decree recently promulgated by the federal Military Government (Decree No. 21 of 1995). Need less to state that, the promulgation of the decree became inevitable considering the mounting of illegal activities going on in the Network.. The decree is all embracing and excuses nobody. The penalty for one found guilty is twenty one years behind the bars without any option of fine.

2.2   TELECOMMUNICATIONS

This is a branch of technology concerned with sending communication over a distance by cable of which the message is being received through telegram, telephone or broadcasting.

Perhaps no history of telecommunications development will be complete without mentioning and acknowledging the early contributions of Alexander Graham Bell, a scottish American, contributions to the early discovery and application of the telephone and those of Guglielm O. Marconi(1874-1937) the Italian inventor who contributed to the development of the wireless telegraphs for which he received half of the 1909 Noble prize for physics. Some other inventors in the mordern telecommunications theory and principles are James Clerk Maxwell who predicted the existence of electromagnetic waves and Heinrich Hertz who demostrated the application of electromagnetic waves.

In 1895, Marconi hit the idea of communicating through radio waves and by 1895, he could ring a bell a few yards away which was quickly improved upon so that by the end of 1895, he could transmit information over a distance of on mile.

The events which followed this development in quick succession were to later transform the nature, method, content and other aspects of telecommunications which of course, was never the same again.

2.3 HISTORICAL DEVELOPMENT OF NIGERIAN TELECOMMUNICATIONS LIMITED

Telecommunications development in Nigeria is tied to the history of what is known today as Nigerian Telecommunication NITEL (LTD). It started as a postal branch of the British post Office in 1851 while the internal telecommunication arm was established in 1885. The key and sounder system of telecommunications was established mainly to serve the interest of colonial masters. Before independence in 1960, series of studies were carried out on the administration, operations and general efficiency of the telecommunication in Nigeria. In 1966, the Posts and Telecommunications (P and T), a quasi-commercial department of the ministry of communications was founded and back by decree 22.

External telecommunications commenced with the provision of direct telegraph services between Nigeria and London which was made possible in 1886 by the African District Telegraph (ADT) and the cable and wireless company of London. By 1962, the equity ownership in the cable and wireless company which was registered in Nigeria changed because the Federal Government acquired 51% equity ownership in the company. This made a change in it's name necessary to the Nigerian External Telecommunications

(NET) limited. Ten years later (1972), the Federal Government bought over the remaining 49% shares in the cable and wire less company of London.

From this early simple beginning, the company has gone trough considerable evolutionary modifications not only in it's structure but also in it's functions resulting in an ever greater complexity and service efficiency. As a result of mature delibration, telecommunications as Nigeria Post and Telegraph (P & T) department and Nigeria External Telecommunication (NET) limited were merged to form the Nigerian Telecommunication limited (NITEL) company under the act of 1968, on 20th December, 1984. More popularly however, NITEL was deemed to have officially taken off from 1st January, 1985. Three years later, the technical committee on privatization and commercialization (TCPC) was set up, backed by decree 25 of 1988, which is now known as bureau for public enterprises (BPE). In line with the provision of decree 25, TCPC was to streamline some government parastatal with a view to partially or wholly commercializing such parastatal. NITEL was one of such parastatal affected and was later known as Nigerian Telecommunications public liability Company which is simply abrreviated as NITEL PLC.

The historical review of NITEL plc can not be complete without reviewing the correspondent technological development and services enhancement. In keeping

with the company's philosophy of customer satisfaction, NITEL has been working tirelessly to solve the many problems usually associated with the provision of telecommunications services. Some of such efforts include increasing the country's telephone penetration, network, expansion and moderation, easy network accessibility and connectivity, and the introduction of value-added telecommunication services.

By far the most significant technology revolution is the progression replacement of the old analogue telephone Exchange by the modern sophisticated digital telephone exchange. Indeed almost all state capitals and some local government headquarters are now having digital exchanges. The digitalisation of some exchanges in some of our cities and the introduction of value added services such as mobile cellular telephone, paging, voice-mail and truncated radio systems have brought NITEL plc to the threshold of a modern Telecommunication organisation testifying to NITEL's victorious emergence from her technology slumber.

However, in 1996, the Federal Government of Nigeria reverted all major public limited liability company owned fully by them to limited liability companies of which NITEL is part of it. To this end, NITEL plc is now known as NITEL ltd.

In the beginning, only some three telecommunication services were known in this country namely; telephone, telex, and telegraphy. Today, NITEL provides a myriad of telecommunications services that include cellular Phones, telegraphy, facsimile (FAX), voice-mail truncated Radio system etc.

The Socio-economic implications of these services rendered in this country are tremendous, and have transformed the life style of the citizenry and the Economic well being of the nation, it is pertinent at this juncture, to know that the activities carried out both internally and externally for efficient services and effective management is co-ordinated by a new management information system (MIS) department created as a result of NITEL (LTD) embrassing new improved technological growth.

2.4   ORGANOGRAM OF NITEL (LTD) NORTH-WEST ZONE, KADUNA
       OFFICE,   KADUNA.

General Manager

↓

Territorial Manager

↓

Senior Managers

↓

Managers

↓

Assistant Managers

↓

Senior Officers & Officer 1

↓

Officers (4-2)

↓

Secretaries

↓

Clerks

20

Nigeria telecommunications has it's headquarters in Abuja; It is divided into five administrative zones, each zone is controlled by a General manager (GM), This zones have their zonal headquarters in:

1)   The Norh-west zone with headquarters in Kaduna

2)   Central zone with headquarters in Abuja

3)   Lagos Island zone with headquarters in Lagos

4)   The South-western zone with headquarters in Ibadan

5)   The South-East zone with headquarters in Enugu

6)   The Norh-East zone with headquarters in Bauchi

Each zone comprises of territories, and these territories have their territorial headquarters in each state capital. The North-west zone for example has Kaduna, Zamfara, Kano, Sokoto, Jigawa, Katsina territories. Each of these territories is under the control of a territorial manager (TM). In each of these six zones, there exist one management information system or services (MIS) department commonly known as the computer department. This department is headed by a senior manager.

2.5   ORGANOGRAM OF MIS DEPARTMENT IN NITEL, NORTH-WEST ZONE, KADUNA.

General Manager

↓

Territorial Manager

↓

Senior Manager

Senior officer Data Control	Senior officer Data Entry	Senior officer Systems Dev. & Operation	Senior officer Maintenance
↓	↓	↓	↓
Officer Data Control	Officer Data Entry	Officer Systems Dev. & Operation	Officer Maintenance

↓

Secretary

↓

Clerk / Librarian

↓

Typist
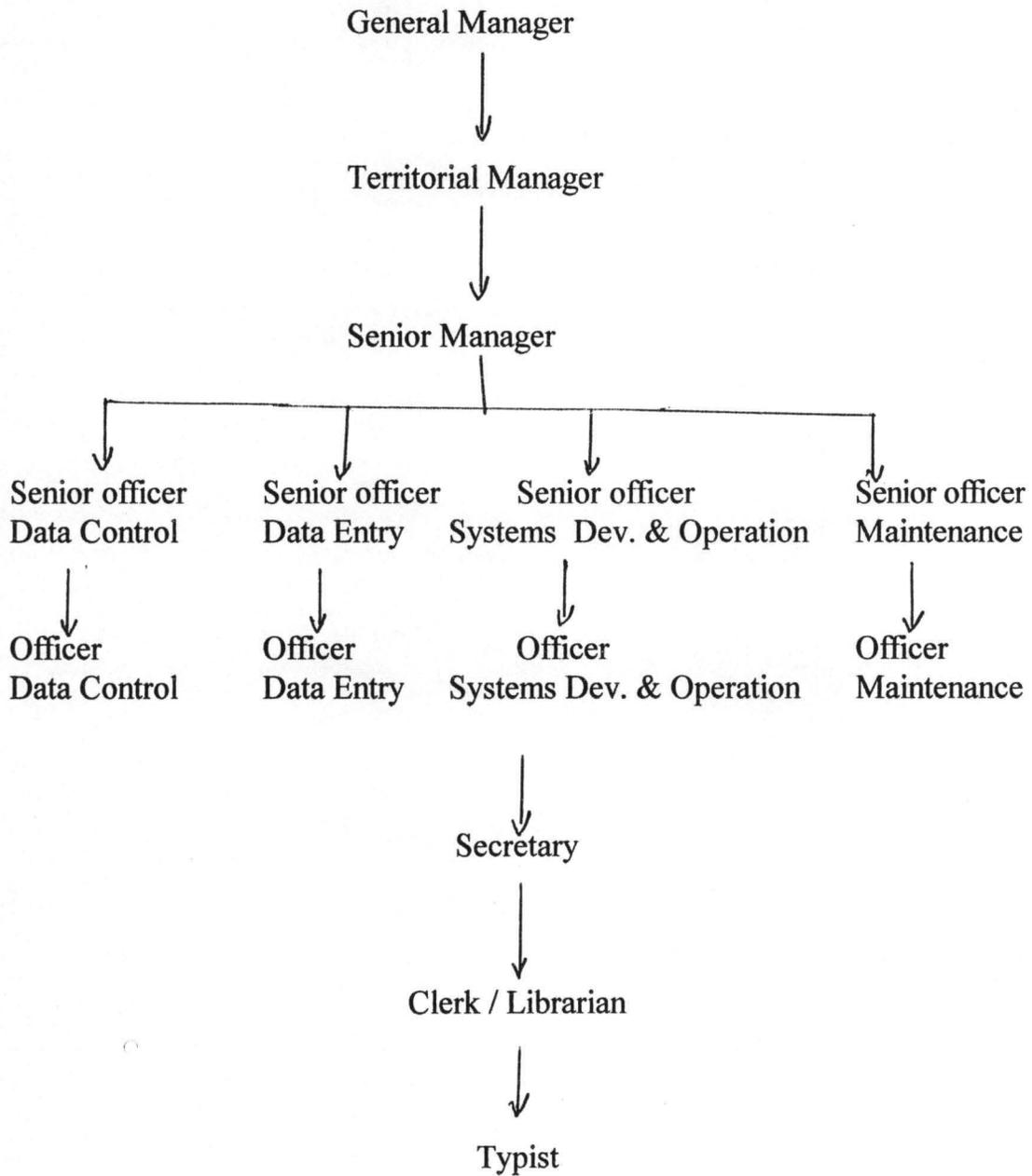
Based on the above organogram of MIS department of NITEL North-west zone, Kaduna, the various divisions and their duties can be explained as follws:-

GENERAL MANAGER

*   He is the head of North-west zone

*   He is responsible to the managing director and chief executive of NITEL (LTD).

*   He co-ordinates the territorial activities in the zone

*   Oversees the implementation of the Organisations management information policies in the zone.

TERRITORIAL MANAGER

*   He is the person that manages the activities of Kaduna territorial office.

*   He is responsible to the general manager.

SENIOR MANAGER (MIS)

The senior manager (MIS) heads the data processing department. His function among others include:-

*   Giving technical advice on staff recruitment.

*   Formulating computer policy guidelines alongside the top management staff.

*   Overseeing the other divisions within the department and ensures that the set objectives are attained.

*   Mediating with the user department to meet their requirements.

*   Enforcing standards for system development and implementation.

SENIOR OFFICER (DATA CONTROL)

*   He is the sectional head who signs for the bills input submitted for processing and hands them over to the data control officer who in turn hands them over to the clerks. These bills come from different territorial offices.

*   He ensures that bills are properly reconciled and checking is carried out on the Dumps before the are passed to the data entry section.

*   He reports to the senior manager (MIS) on the day-to-day activities of his section.

OFFICCER (DATA CONTROL)

*   He performs the actual reconciliation of bills brought to the department through the sectional head in conjunction with the clerks of the department.

* He is the direct supervisor of the clerks.

* He is responsible to the senior officer (Data control) in the day to day activities in the office.

SENIOR OFFICER (DATA ENTRY)

* He is the head of data entry unit

* He signs for the bills input submitted by the data control section

* He schedules the bills for entry into the computer

* He is responsible to the to the senior manager (MIS) in his daily undertakings.

* He liases principally with the data control section.

* He makes sure the billing inputs are being returned back to the data control section.

OFFICER (DATA ENTRY)

* He reports to the senior officer (Data entry).

* He receives billing inputs signed by the sectional head for the purpose of entering them into the computer (records).

* His principal function is to enter the data programs into the computer but

perform no verification.

* He return this bill inputs to the head of section for onward submission to the data control section.

* He supervises the clerks and other staff of the unit.

SENIOR OFFICER (COMPUTER OPERATION)

* He reports to the senior manager (MIS).

* Receives notices of the pending bills from the control sections. These are recorded in the bill inputs book.

* He ensures that the computer is put into optimum use, reduce the computer down time and see that the pending bill inputs are executed mostly as recorded in the book, using (FIFO) first in first out.

* Sends the output back to the data control divisions for verification to make sure the errors going to the customers and NITEL Organisation are correct or reduced.

OFFICER (COMPUTER OPERATION)

* He is responsible to the senior officer computer operation

* He executes the programs.

* Supervises the clerks of the unit.

* He draw up optimal job schedule.

* He maintains records of systems utilization.

* He reports the system failure to the senior officer.

* He sees that the computer down-time is minimized.

SENIOR OFFICER (SYSTEM DEVELOPMENT)

In this section, the analyst and the programmers work together, in supervising the subordinate staff.

The duties of the analyst are:-

* He is the communication link between the user and the system.

* He spearheads data collection and analysis techniques.

* He co-ordinates system design and implementation.

* He performs the post implementation review.

* He performs cost comparing analysis between all the available alternative designs.

Duties of the programmer are:-

* He works hand in hand with the analyst to evolve the design and the

programming philosophy.

* He gives report of his division to the senior manager.

* He performs program documentation.

* Supervises the test-running of the system with test data.

Both the analyst and the programmers in this section are directly responsible to the senior manager (MIS).

OFFICER (SYSTEM DEVELOPMENT)

* He is responsible to the senior officer.

* He ensures or carries out all the duties expected to be carried out in the section.

* He supervises the clerks of the unit.

SENIOR OFFICER (MAINTAINANCE)

* He reports to the manager (MIS).

* He is principally concerned with the maintenance of the hardware systems.

* He supervises the officers in the actual performance of their maintenance duties.

*   He liases with the operations department under the directives of his superior.

SECRETARY

*   He is in charge of all the correspondences within the organisation

*   He uses a machine or machine conbined with a communication system to make efficient the job of obtaining, organising storing retrieving and preparing needed information. An example of such is notices of meetings in the organisation.

LIBRARIAN

*   He takes charge of all the computer consumables and accessories, Keeping computer files on disk packs or tapes.

*   He issues disks and tapes to the user.

*   He maintains a record of usage of the disks or tapes.

*   He keeps both the systems and programming manuals.

TYPIST

*   Types the correspondences of the organisation.

*   Receives and dispatches mails.

*   Reports to the secretary.

*   He can be assigned other duties apart from typing in the organisation.

2.6 COMMUNICATION IN NITEL (LIMITED) NORTH-WEST ZONE, KADUNA

Communication touches every sphere of human activity. It informs all of man's actions because it is occasioned by his need to interact with his fellow man. It Manifest itself in symbols and verbal forms. Animals and trees also communicate, but it is man's ability to create symbols, ascribe meanings and interpret messages that elevates him above the status of the lower animals and gives form and character to his existence.

Communication also serves as an instrument of social interaction. It helps us to understand them and to predict their response to situations. It provides a means by which people in business, politics, and the profession act, and interact, exchange information, ad ideas, develop plans, proposals, and policies, make decision, and manage men and materials. It is also the lubricant that keeps the machinery of the organisation functioning, it is the means through which roles are identified and assigned, it is the life blood on an organisation.

The communication processes with NITEL are vital for the achievement of its goals. They are the processes that link the various units of the management information system. They are found at all levels of NITEL, hierarchy and they affect every individual working for NITEL in one way or another. The way the communication systems is being managed, has a significant impact on the ultimate effectiveness of the total organisational communication has a major influence on both types of organisational goals which is the task to be performed and maintenance of the organisation. Without some means for downward communication employees would not know what work they are expected to perform and when and how to do their work. Without adequate provision for upward communication, managers would not have the information needed to decide what to tell employees to do in the future. As NITEL grows and become more complex, communication related to it's maintenance goal become increasingly important. Employees, including those at managerial levels, want to know how their work and their departments fit into the total operation, and they want to be informed about changes that might have some effect on their jobs or job environment. Thus in NITEL, the management effort involved in communications process is considerable.

A variety of channels are used to transmit information. Essentially,

communication is the transmission of a message from one person (referred to as the source) to one or more other persons (receivers). The vehicle for transmitting the message is called the channel. Communication channels may be oral or written, formal or informal, and one-to-one. The message may involve a directive or order to do something, may be a suggestion for changing a procedure, it may be an expression of approval or disapproval for the way a job has been performed and so forth.

For the successful transmission of messages, the has to be some assurance that the source and the receiver have some common basis for understanding the messages, that is, having the same meaning to the persons sending the message as to the person or persons receiving it.

The General Manager who is known as the encoder (the person who initiates the message) could decides to send his message through an oral medium, letter, report, memo, telex, or telegram. In NITEL the Territorial Manager, Senior Manager, Senior Officer, Officers can engage in conversion with one of his or her subordinates on matters, concerning the organisation, such oral communication can also be sent or such information from this type of communication can be passed by with such channel as radio, telephone or face to face. It is the duty of the management information system unit, to choose the

appropriate channel that will yield effective result so long as the message is been decoded, (the receiver of the message), written communication is just the translation of oral messages into alphabetic symbols. These symbols are then organised together to convey ideas, messages or information between those who participate in the communication encounter. In NITEL, written communication is normally used in reports, queries (normally used to discipline erring staff), for circulars and memos, in telegrams and telex for personal and business letters and for questionnaire and forms designed for collecting information e.t.c.

In describing the channels of communication in NITEL, it is also important to look at the communications system, that are the formal and informal system.

The formal system is the officially recognized route for task related messages.

The informal system carries unofficial information. One will now examine ways in which messages flow through the formal and informal systems.

FORMAL COMMUNICATION

The formal communication system is used for all official messages including directives, procedures, policies, explanatory memorandums, job

instructions and so forth. This system is based on a chain of command from the top of the organisation down, bottom to top, left to right, or right to left. Depending on the direction of the flow, it could be as being either vertical or horizontal. Within formal system, therefore, there is a vertical communication flow and a horizontal flow.

Vertical communication flow:- refers to the flow of messages from those at the top of the hierarchy to the persons at the bottom and from the most senior officers to the most junior workers. It also refers to the flow of messages from those at the bottom to the persons at the top. For this reason it has a downward flow and an upward flow.

i.   The downward flow:- For example in the organogram of management information system unit, Kaduna, the downward flow carries messages from the General Manager through the senior manager, senior officer to junior workers. Generally, it is the communication coming from the person with the greatest authority in the organisation to the person with the least. Originally, downward communication was considered the classical model for information on organisational policies and plans come down to other employees from the top, workers now have more say in how some policies are formulated. Emphasis is

now placed on partipative management where it is held that the affairs of the organisation must be every worker's concern. That type of thinking has spotlighted the importance of upward communication.

ii.　Upward Communication:- This describes information which is sent from those at the bottom of the organogram of the management information system unit to the higher ranking officers in the organisation. It is more of a feedback device which supplies information about how people have reacted or responded to the communication passed to them by managers. Example can be seen on the organisational chart of MIS Unit NITEL Kaduna. Here information for upward communication flow from bottom, (Typists/Clerks to the top), to the Territorial Manager or it might stop at senior manager (M.I.S.) depending on the issue at hand. As a feedback loop, it enables management feel the pulse of employees. If encouraged, it can boost the employee's confidence and morale as well as enhance productivity.

In must be noted that all messages up or down the pioneer hierarchy, must be sent along the officially recognised channels. Every employee within the organisation is expected to observe this practice.

iii.   <u>Horizontal Communication Flow</u>:- This term refers to the exchange of messages, ideas and information between colleaque or workers on the same level or of the same rank, about the tasks which they perform within their organisation. This plays a co-ordinating role as people performing a variety of duties and exchanging information about activities in their respective sections. Communication can be described as horizontal when it takes place among any of the following group of officers, the managerial staff, supervisors of sections, heads of departments, and clerks. The exchange is done through face to face interpersonal communication, meetings and committee as well as through memos. Horizontal communication gives a sense of oneness across the breath of the organisation by fusing workers or people of the diverse units that make up an organisation. It importance therefore cannot be underestimated.

iv.   <u>Semi-Vertical Communication Flow</u>:- With the advert of trade unions, a new system of formal communication has emerged. Trade unions whether management approves of them or not, are recognized by law as the official mouthpiece of the workers and therefore constitute a seperate official communication system between management and the workers.

Members of trade unions take up matters concerning the working

conditions and welfare of employees with the management after consulting with workers, when agreement is reached on the issue being discussed, they report these directly to the workers without following the hierarchy as established by the organisational chart below:

On the other hand, if management has sensitive policy decisions that will seriously affect the employee, they might first discuss the matter with the union while eventually passes the information is passed down to the workers. Trade unions therefore operate the two step system of communication flow, information goes from workers to the union, then to the management or, from management to the union and down to the workers, by passing all other levels of authority within the oraganisation.

v. Informal Communication:- The informal communication system is the unofficial channel in processing official information. It is a form of communication that by -passes all official channels of authority. When there is information in the channel, it will filter it's way through to the managing director or any other source by a number of means. The main channels of informal communications are rumour and the grapevine.

The grapevine is the channel, usually an oral, one to one channel, through

which rumours involved are possible. Changes in company policies, production plans, or top level management, their effect on both productivity and organisation climate can be devastating. Due to this, the grapevine generally is viewed negatively by employees although it is often perceived as influential since rumours frequently have an element of truth to them. However, most messages transmitted through the grapevine are either groundless or distorted in some ways. Probably the most effective approach for offsetting the harmful effects of the grapevine is to make sure that formal channels are established and used for all information managers and employees need or want to know.

2.7 DECISION MAKING STYLES IN NITEL, (NORTH - WEST ZONE, KADUNA).

Decision making is a mental process by which a manager gathers and uses data. By questioning others, shifting the answers to find relevant information and analyzing data, managers, individually and in group, manage and control information and ultimately their business environment.

There are basically two types of decision, and each requires a different process. They are strategic decision and operational decision making.

1.   <u>STRATEGIC DECISION MAKING</u>

Strategic Decision making determines what the organisations want to be. It is the frame work that guides those choices that determine the nature and direction of an organisation.

Setting strategy is a task that belongs to top management. Only senior executive have the responsibility for determining the way the organisation is to be directed, though key line and staff executives must be sure that their respective functions have a clear strategy that is in line with the overall direction of the organisation.

Once the organisation's driving force such as (product/service/market, capabilities and result), is determined, a coherent strategic frame work can be defined to integrate products and markets, capabilities to support them, the organisation's growth and return targets and the allocation of it's resources.

After the driving force is determined and a strategic frame work is put in place, strategy must be implemented. Implementation requires communication of the strategy. Individual managers must be able to carry the organisations strategy in their heads and to make day-to-day decisions according to the strategy. Here the critical issues such as major changes, modifications, additions

to the organisation's structure and system to it's capabilities and resources, and to it's information needs and management that result from setting strategy must be resolved for the strategy to succeed.

ii.   OPERATIONAL DECISIONAL MAKING

Operational Decision making determines how the organisation should get where it wants to go. It is also framework that guides how individual managers or teams organise information, investigate situations, arrive at choices, and implement decisions.   Once the strategy is set the organisation will now determine how to carry it out. Operational decision making is equally critical to an organisation success.

Operational Decision making involves four rational process. The first concerns organising, effective managers sort out situations by asking pertinent questions and setting priorities among situations. Secondly, in addition to their ability to organise, capable managers are good at investigating. A logical sequence is followed in other to determine what information is relevant and critical. Thirdly, operational process concerns making choices. Here effective managers set criteria for choices, evaluate altenatives against these criteria, and consider the risks associated with their choices.   The fourth process is

implementing decisions. Good managers anticipate what might go wrong and take specific actions to prevent adverse consequences or to minimize their effect.

These four patterns of thinking cover all the operational decision making that managers and employees perform day to day.

2.8   Management, motivation and leadership, in MIS Department.

Management is a course in the business social science that tends to describe the way by which materials, machines and people are co-ordinated in other to generate some goods and services required by people.

According to (Bittel) 1995 in his Encyclopedia of professional management; He has other supporting concepts, which amplifies the basic concept management for use in practical settings as follows:-

a)   Managing is getting things done through other people. This definition stresses teamwork, delegation, and results.

b)   Management is partly an art and partly a science. This definition recognizes the presence of intuitive, subjective skills in the management process and the growing importance of verified knowledge as a guide to managerial decision and action.

c) Management is an academic and professional discipline. This implies that a tenable body of knowledge is incorporated into the curricular of schools, colleges, and technical institutions. It includes the possibilities for the development of management as a profession.

d) Management is a collective norm used to refer to the entire management group of an organisation used in this way, the term is convenient for designating a body of manager as a whole.

e) Management is the performance of the critical functions essential to the success of an organisation. This definition essentially holds that management is what managers do in performing their roles as managers.

HENRI FAYOL Says "management is a process of functions with planning being the most important".

MARY PARKER FOLLET Says "The essence of management is co-ordination" and lastly,

FRED .W.TAYLOR Says "Management is the scientific method being applied to work problems.

It takes good management for an organisation (NITEL) to be successful and profitable. This is a managerial responsibility. Essentially, managing is a specific kind of work which could be analyzed, studied and approved systematically. At the zonal office of NITEL LTD Kaduna, where the MIS department is situated, there is a senior manager (SM) that carries out the management of human and materials (workers and computers) resources. There are managers of the five different department in the MIS unit; where there are officers under the manager. It is evident that managing the MIS unit is a complex one and can be looked at from the perspective of NITEL, It's objectives and the employees. Management of MIS involves the use of scientific method of co-ordinating work to see that the organizational goals are met.

The study of management brings us into many sub-divisions; But for simplicity, we may categorise management into three broad types:-

i)   Institutional management:- This category of management is composed of the board of directors, chairman and a group of executives oriented towards establishing the relationship between the sectors and their roles in the establishment. The relationships between the firms or the establishment and other institutions in the same business environment or outside environment are clearly defined from time to time.

The institutional management is the head of the overall management of an enterprise. This category makes decisions or policies for the rest categories of management members of the institution more or less standing as the mouth piece. The decision or policies combined by members of this category constitute the ruling principle on which the activities of administrative and technical staff are implemented. the institutional management presides over the management of the annual general enterprise.

ii)   Administrative management:- It is made up of division or branches otherwise called departments with specific functions allocated to them. Administrative management involves mainly the work of co-ordination, organisation and integration of the ideas or policies already formulated by the institutional management.   It follows therefore that the administrative management provides all the necessary process through which the enterprise goals and objectives can be achieved. The administrative management therefore involves the different managers of the various departments assigning duties and responsibilities to their subjects or subordinates.

iii)   Technical management:- This is the category that provides technical and vocational advice to the line staff in a line organisation. A line organisation, is that in which staff or members of staff of organisation are given seperate

assignment with their authorities clearly defined. In line organisation, the functions of each staff does not encroach into the functions of others in the hierarchy of management. In essence, technical management embraces professional advice to the line staff members of the technical competence. It is geared towards producing tools and services as well as distributing the products to the departments particularly the ware housing unit of the organisation. The service of technical staff is more predominantly required in the organisation that engages in secondary production and not in primary or tettiary production.

MOTIVATION : This is a social concept which received much attention from various social scientists. It is concerned with how and why people act as they do and it could be interpreted as moral base. It is the process through which the leader stimulates a worker and/or subordinate towards desired objective of organisation. It is the forced unduly individual attitude called "Motive". It is the medium through which attitude is translated into behaviour. It is the inter personal relationship of the leader toward his subordinates, that does the work of exciting motive in the subordinate which results in work behaviour, such work behaviour could be negative or positive, when the worker is stimulated positively, his needs and aspiration are satisfied, this result in raising his

commitment, when otherwise, the reverse become the case.

LEADERSHIP:- A leader is responsible for the motivation of his subordinates at work. The success or failure, achievement or non achievement of objectives in any organisation is to a large extent attributed to leadership.

Lawler (1973) admitted that, "Leadership has an important influence on organisational effectiveness because it influence both intrinsic and extrinsic motivation as well as in determining the kind of norms group will develop toward productivity.

The values of the leader, influences the direction of the organisation or department. The term values as used here is a fairly permanent belief about what is appropriate and what is not, the guides, the action and behaviour of employees in fulfilling the objectives of the organisation. In many successful enterprises value driven corporate leaders serves as role modes, set the standard for performance, motivate employees, makes the firm special and becomes the symbols of the external environment. Such action of a leader, create conducive organisational climate which motivate the subordinate. Although individual desires and drive are conditioned by physiological or sociological needs, what

people are willing to strive for is also affected by the organisation climatic in which they operate, which could curb or cruise motivation.

Therefore, leadership in organisation, must be based on understanding of what motive to employ in the organisation and on the ability to build sound inter personal relationship between organisational members, good system of inducement contributing to the achievement of the organisational goals. Motivational factors and organsiational climate, both depends on and are influenced by leadership styles. Leaders that wants to be effective must respond to the motivation of individuals if they are to design an environment where people perform willingly. In like manners, they design an environment where people perform willingly.

In like manner, they design a climate that will arose or reduce motivation. Leaders design an environments for performance, when they see that verifiable are set, strategies are developed, communication and plans to achieve objectives are made. They also do so by designing a system of organisational roles in which people can be effective. Leaders do this when structure is well staffed. Their leadership styles and ability to solve communication problems are well articulated. Finally, a leader create an effective environment when they make sure that control tools, information and approaches furnish people with the feed-

back knowledge the need for effective motivation.

In any organisation, before it's members can perform near it's total capacity, it must have a person at it's top, who is skilled in the art of leadership. This skilled comprises at least some ingredients that is, the ability to comprehend that human-beings have different motivating forms at varying times and in different situations, the ability to inspite and lastly the ability to act in a way that will develop a climate for responding to and arousing motivation.

Essentially, for leaders to lead, they must understand the person or group of persons they are leading. They must never violate the dignity of people. People must be treated with respect no matter what their position in the organisation is. Both leaders and the subordinates are human beings and they all contribute to the attainment of the organisational goals.

2.9   MANAGEMENT INFORMATION SYSTEM (MIS) IN PERSPECTIVE.

MANAGEMENT involves the co-ordination of human and material resources towards objective accomplishment. Peter Drucker once remarked that "Without management raw material or resources remain more resources and can never become finished products"

INFORMATION :- is said to be power but by definition "information is processed data". Information on it's part is essentially raw materials used in making decisions. It consist of data that have been retrieved, processed or otherwise used for planning and controlling organisational operations. It is the job of management information system to process data, into information, it must;

*   Aid it's recipients in his or her understanding of decision situation.

*   It must elicit action.

*   It must be timely and accurate.

*   It must be available in the right amount.

*   It must present trends, ratios and lend itself to forecasting.

SYSTEM:- can be thought of as any systematic process for providing management with reports, data or other outputs creation and storage of inputs; performance of processes and storage of outputs are functions of any information system.

A management information system can now be defined as an organised collection of people, procedures, database and devices used to provide routine information to managers and decision makers.

The operational efficiency or effectiveness of the MIS department depends on quality of information generated, hence other functional areas are

typically supported by management information system.

WILLIAM BERNARD:- has the view that any MIS department requires large amount of detailed information and that increasing the quality of the MIS department's contribution. And that many personal activities and much effort by personnel professionals are devoted to obtaining and refining the department information base. He also had it that the information requirements of a full service department is only invited at such questions as:-

* What are the duties and responsibilities of every job in   the organisation?

* What are the skill possessed by every employees?

* What are the organisations future human resources need?

* How are external constraints affecting the organisation?

* What are the current trends in compensation of employees? e.t.c

EVERARD - BURROW:-in his book "Business principles and management" (1984), all business transactions involve data, and data are converted to information for the purpose of making decisions. That most organisation generate huge amount of data, yet decision makers often have complaints, because they may be too much of the wrong kind of data, or requested information may arrive too late to be useful. In some cases,

information needed in MIS department may be available in another department and not readily available where needed, or not in form needed.

EVERARD - BURROW:- had it that management information system is an organised way to capture, process, store, retrieve, and distribute information throughout an entire organisation. He stated that each department should be given different kinds of equipment. For example the office manager usually will need a word processing equipment (A computer). And that the system if in operation should be received on a regular basis to determine whether to maintain or to revise the system.

And finally to managers, the management information system is the very computer based information system that support all their decisions, and having aims and fulfillment as follows:-

*   Information provided should be relevant to the individual decision maker hence, the information described as data should be relevant.

*   The manager does not want large amount of information, he requires critical factors controlling the firm's success to be highlighted, which is known as "management by exception".

*   Data that enters into the system must be validated to ensure that decisions are made with information obtained from accurate data. This accuracy also

implies that the information reflects the current situation and therfore not from briefs that is out dated.

* The Data must reach the MIS unit at the time it is most needed and useful.

* The system should be capable of being redesigned conveniently so that it response to changes in the needs of the customer.

* The design of the MIS is very critical and should no be left to the technologists alone hence the need for an INTER DISCIPLINARY SYSTEMS PLANNING TEAM to carry out the overall design function.

2.10 SUBSYSTEM OF MIS

Within the MIS, there are five subsystems that carry out specialized information roles that can not be over-looked. They are:-

i. MANAGEMENT SUPPORT SYSTEM (MSS).

This MIS subsystem is aimed at helping managers make effective decisions by providing them with reports that are timely and to the point is called management support system (MSS). Operational Managers depend a great deal on the information from the report generated through the MSS to make their decisions. While tactical and upper level managers also use reports generated by the MSS, their decisions are not easily programmed like those of

52

lower level, since they must depend on intuition and problem-solving talents as well as reports. For this reason, they also use information from other sources.

ii. <u>DECISION SUPPORT SYSTEM (DSS).</u>

A decision support system allows decision maker to ask "What if"? questions about the data by using models to solve problems involving the data. A decision support system is used when decisions cannot be made using clearly defined policies, then the models and graphics supplied by a decision support system is used. The support decisions that are so different each time that would be hard to develop a standard set of procedures for programming them. A decision support system should enable the decision maker to apply the right decision rules to a problem, rather than using rules that may not apply because of changing conditions. For example, it would be ineffective to apply an inventory re-order model designed for slow moving items to a problem situation involving fast moving items. A decision support system provides the decision maker with the flexibility to explore alternative by using appropriate data and models.

The design of a decision support system mostly take into account the characteristics of decision makers, and of the decision making process. Decision support system attempts to combine the use of models or analytical techniques

with traditional data access and retrieval functions. A manager can overcome some of the problems associated with traditional information system by determing what database can be used, by defining what data analysis techniques are required, and by identifying what output are meaningful.

In building a decision support system, you first need to define your infomation requirements. Ideally a decision support system should provide a database that serves as a repository of data for easy access and change. Copies of data base support transaction information system are often used in decision support system, for example, an order history of telephone line owned by a NITEL subscriber who wants to know and have a computer print out of his service line calls for his telephone due to an outragious bill sent to him. This may provide an excellent source of data for a decision support system.

The next step in developing a decision support system is to determine the type of data access or analysis needed. Status access, or analysis needed. Status access, personal analysis, and model base analysis are possible methods of using database.

The tools for decision support system include a variety of software supporting data base query, modeling, data analysis, and display. A comprehensive tool kit for decision system would include software supporting

the application areas. Tools like spreadsheet program, make it possible to evaluate alternative ways of allocating resources and support the design phase.

Finally, choice or the selection of an appropriate course of action may be supported by summary statistics of the preferred alternative.

As user learn how to develop their own information system, they need to become concerned with quality assurance data validation and testing backup and recovery.

In summary, decision support system perform the following functions:-

a)   Provide information on a timely basis

b)   Ability to control ongoing operations

c)   To achieve a better understanding of the business setup.

d)   To examine more alternatives

e)   To respond quickly to unexpected situations

f)   Help managers analysis the long range impact of a new marketing venture and avoid future problems.

g)   Ability to achieve to time and cost savings. If managers takes hours to make a budget forecast using spreadsheet instead of 20 hours using a calculator, time effectiveness improve.

iii)   EXPERT SYSTEM (ES)

Expert system is a type of information system that is being used more and more to support managerial decision making. In expert system, knowledge is represented in form of rules or in form of frames. Rules based systems consist of sets of rules that describe how knowledge is used to reach a conclusion. Frame based systems include frames or networks of nodes, organised in a hierarchy to represent knowledge. Depending on the nature of decision the expert system will use different rules. These rules are applied in different order in different decisions. Each time a rule is executed, a change in the database is triggered, new questions are asked, and new rules are applied.

Expert systems are good at problems requiring diagnosis, prediction, and planning. Some diagnostic systems are designed to detect system malfunctions from facts that are supplied. For example, expert systems have been developed to diagnose faults in electrical systems, electronic diagnosis. For example, MYCIN was developed to assist physicians in diagnosing infectious blood disease using knowledge of patient history, symptoms, laboratory test results and the characteristics of the infecting organisms, and recommend appropriate therapy. Another expert system, Blue Box, help diagnose and treat various forms of clinical depression. The system uses information about the patient

symptoms and medical, drug, and family histories to suggest a plan that may include hospitalization and drug treatment. Expert system technology presents an opportunity to capture the knowledge of experts and to share it as a resource throughout the organisation.

The initial step in developing an expert system is the selection of a project in which a recognised expert can be found. These experts should be many times better than an amateur problem - solver in the particular area. The task must also be narrowly defined so that specialised knowledge can be used. Even though an expert system may be possible and justifiable, it may not be appropriate unless the task at hand is appropriate. The task must require a heuristic solution, that is , one which requires the use of rules of tumbs to achieve a solution. Secondly, the task must be sufficiently narrow to make the problem manageable, yet broad enough to be of practical interest. Thirdly, the task must be a serious problem is able to address.

iv)   OFFICE INFORMATION SYSTEM (OIS)

The office is often viewed in three distinctive ways:- As a location at which office work is completed, as a set of functions or tasks, and as an integrated system. They way the office is viewed has implications for the way

office work is organised and how the productivity of office workers is measured and improved.

Office performs three functions; administrative support, document processing and data processing. A consideration amount of office technology has been developed to address the automation of the administrative support and document processing functions. These technologies include word processing, desktop publishing, scanning equipment, computer conferencing and electronic mail systems etc.

An important means of improving office work is to integrate the various office technologies into office information system when this is done the computerised output of one system becomes the input of another system. Thus, electronic scanners and graphics soft wares can provide input to desktop publishing systems the output form which can provide input to computerized database and electronic mail system. Office technology provides operational level support for managers and computer technology and information system is used to support managerial making.

v)   FUNCTIONAL INFORMATION SYSTEM (FIS)

Each functional area of a business - marketing and production, etc needs it's own information subsystem in order to carry out it's operations. In many situations, the FIS is either informal or not very well developed. However, as more managers realised the importance of information to their functions area, FIS is becoming more formalized. Eg in the marketing area, a computer - based information system is useful in managing lists of active and potential customers; in manufacturing, an information system has many uses in managing the inventories scheduling etc.

2.11 IMPORTANCE OF MIS

MIS department is a very crucial department and it's importance can not be over emphasized. It is the department that produces the zone's monthly bills. It is through the issuance of these bills that NITEL gets to know of who settles his/her bills and who does not. After a certain amount of debt has been accumulated by subscribers, without any effort of even reducing the debts, NITEL decides on ceasing the services rendered to such subscribers.

For any serious telecommunications outfit to remain competitive, one has to have a very sound capital base. In other to have a sound capital base, and

maintain a competitive edge, one has to optimise collecting revenue accruing to the company as a result of the services it provides. This is where MIS comes in by ensuring that all services provided are billed. They are not only billed but they are billed on time so that the money is collected in time to be able to maintain the system and to invest so as to expand the network and at the same time generate and collect more money. So, MIS is the pause of the company. If there is an ailing MIS then the company cannot be competitive and cannot be viable; therefore so it is very crucial to the survival and well-being of telecommunications companies like NITEL.

It is interesting to note that the present management has recognised that and it is giving every possible encouragement and support to MIS so as to ensure that billing is done on time and accurately too; for the company to be able to improve it's revenue collection.

Management information system has began to explore alternative application development approaches, including software packages, user development and phototyping in system design. Automated tools for software engineering have also been introduced to speed up the application development life cycle.

With the advert of computer technology in the 1950s, business

organisations began to develop management information system. These systems are in essence a complete communication network linking all parts of an organisation no matter how geographically dispersed they may be. Such a system permits input data from any point within the organisation, data transmission, data processing, and information storage and retrieval. In effect, it is capable of gathering and processing all the data needed to provide information for planning, operation, processing, and controlling the organisation.

While the potential value of management information system as a communication channel is great, the technology appears to be far ahead of actual or effective application to date. NITEL as an orgainsation has no yet developed their system to that possible extent in the MIS unit. Top level managers have pass word which they use to put certain data into the computer data bank for fear it will become available to unauthorised persons. There are many applications, however, where MIS have proved worth while, particularly in such areas as production of bills, production planning, and new customers projection.

A major benefit of the use of computer networks for communications is that the information can be transmitted directly from the operating levels of organisations to the highest levels without having to be processed through the several hierarchical levels in between. This both saves time and reduces the

chances of distortion of the information transmitted.

Infact, management information system plays a lot of roles to business organisation (NITEL), thus through strategic planning systems provide top management with information that assist in making long range planning decisions, for business organisations. These strategic planning information system are used by top management for the setting of long term organisational goals. In other words, tactical information system provides middles managers, with the information they required to allocate resources needed to achieve organisational goal.. Often, these tactical systems, summarizes data generated from operational system. Many organisations today are building information system to achieve a competitive end. The growth in information system involves the construction of operational, tactical and strategic planning information system to support the managers of the business.

However, the growth of data processing system involves more than technology and applications. It requires user involvement in application development, the organisation and management of MIS function, and the development of effective planning and control strategies.

Interms of financial systems, tactical financial information system supports management decision making by providing managers with regular

exception reports, and other information that helps them control their areas of responsibility and allocate their resources to pursue organisational goals.

Management information system, develop hardware standard, providing support and training and offering technical assistance and training program.

The establishment of MIS in NITEL (LTD) is desirable, in order to create job opportunities for Nigerian citizens.

Helps to generate a lot of revenue after having discovered defaulters, that are owing (that is those with outstanding bills).

And finally an actual management information system provides an organisation with flexible, integrated tools for the planning and control functions of the endeavour. With the ability to respond to planned and unplanned information requirements at all managerial levels.

2.12 THE COMPUTER

The computer is a set of electronic and mechanical component that can perform a series of instructions very quickly in terms of speed and very accurately, without human intervention. As a system, the computer has three essential elements:-

The Memory (storage)

This is a place where instructions are recorded or stored. Information and records of what it has done, is doing and has yet to do, for example the elements of subscriber's account, subscriber's identification numbers, meter reading and rate of pay for bills as used by Nigerian telecommunications (LTD). Two key properties of a memory are it's size and it's speed. Another point here is that memory parts are the most expensive of the computer system.

The processor (the brain or control unit)

Each computer has it's own machine language to control it's basic operations and it's various devices. The processor is that part of the computer that carries out computer operations. It processes information in the memory. It can also sense and store in memory, new information of different kinds. The processor, therefore, houses the control unit, which interprets and executes the instructions, and an adder, which can add rapidly. The processor is, thus, analogous to a brain - performing interpretative functions.

The program (Input and Output)

This is a set of instructions for the processor. A program is a set of instructions written in some language. It embodies the knowledge of how to do something. Functionally, a program controls the actions of a computer. It is important to note that programs control the action of a computer and program

are created by people.

Initially, the computer was designed as a tool to manipulate numbers and solve arithmetic problems. This original use is understandable, since most of the early designers and users were Mathematicians Scientists and Engineers.

However, people began to realize that the computer could process symbols (e.g. alphabets symbols) as well as numbers. Indeed, the computer can read input data, transfer or move data, store and retrieve data, test data by logical operation and generate output results.

Things that actually brought about the use of computer are:-

a)   To help in making accurate and reliable logical comparison between things.

b)   Computer was thought and developed to reduce the complex calculations into smaller forms.

c)   To ease the cumbersome nature of inflow and outflow of data.

d)   To further help in efficiently storing, filing and processing of data and information.

In view of the fact that it's functions are broader than just computing, the computer is sometimes more descriptively called an electronic data processor (EDP) or an Automatic data processor (ADP).

Today, because of the invention of computer, they are active in almost all divisions of Science and Technology, and are doing their jobs efficiently. Apart from pure computational work, they control production processes, handle statistical work, do economic planning, gather and process information and solve logic and other problems.

Computer can be classified into 2 main types depending on the way they represent and process information. They are:-

i.   Analogous computers

ii.   Digital computers

iii.   Hybrid computers

i.   Analogue computers performs it's operation by measuring and comparing or relating physical phenomena or changes and variables in the form of mathematical equation in some notable quantities. Analogue computer processes data that vary continuously such as varying temperature and speed e.t.c It is also used for a wide variety of industrial and scientific applications that require the processing of data that are measured continuously. It does not contain memory since it measures or compares data/value.

ii.   Digital computer performs arithmetic operations and access logical decisions according to instructions coded logical advance. Here numbers and letters are represented as digits, personal computer and main frame are digital computers.

iii.   Hybrid computers combine the capability of analogue and digital computer system in one. They are powerful computing devices and are mostly used to solve rather sophisticated problem such as those from the studies of process control and optimization, any physical process described by a set of physical simultaneous ordinary or positive differentiation.

In turn, computers can be subdivided into special purpose and general purpose computer.

A special purpose computer is designed for only one purpose. It is designed to carry out specific tasks. The computer use for guiding Nasa's space shuttles are example of special purpose computer.

A general purpose computer can be used for many purposes. They are designed not specifically for specific jobs. It may be used for playing games, for handling payroll computations, to use graphics to design building or to solve complex mathematical problems and also for billing

2.13 BILLING

Bills are telephones services consumed by a subscriber in a giving period usually calculated monthly. They are produced every month end. It contains information on all tansaction made with NITEL by the subscriber and the financial implication of the same. The cost of services rendered to the subscriber is stated and an advice on the need for prompt payment and channel of payment is given in which billing is the act of creating the bills.

In the relationship between NITEL and it's customers, both parties unite at a point of convergence. This is the point where NITEL says "a customer has consumed an amount worth of telecommunications services" and the customer agrees to pay for the consumption of these services. The media of exchange at this point are the NITEL bill on one hand and the customer's money on the other hand. To make this economic relationship efficient and hitch-free, the bills must have high integrity bringing into focus, it's accuracy and timeliness.

There are little details contained in each bill. Such details as Name and Address of the subscriber, telephone (service) number, duration (month) for which the bill raise, some details regarding the charges, amount of service consumption (meter reading) and total amount due for payment.

Occasionally, some customers complain of some inaccuracies in their

bills. Customers have often, even though ignorantly, blamed such inaccuracies on NITEL. NITEL has no desire of producing inaccurate bills. In fact inaccurate bills create accounting difficulties hence NITEL tries it's best in ensuring that customers are billed accurately and on time. While NITEL does not claim to be infallible, it goes the extra mile to ensure bills accuracy. Even though, in the last couple of years NITEL has invested millions of Naira in machinery and personnel aimed at ensuring that bills are accurate.

Billing as a service can be broken down into four categories:-

a)   The first category is the dominant one which represents largely about 90% of the billing activity and includes both local and international telephone lines.

b)   Billing for telex services which represents about 10% of the total billing activity.

c)   Billing for inmarsat services. This is a service that allows subscribers to communicate with ships or between ships and the shore.

d)   Billing for leased circuits that are provided to big companies.

This study is restricted to the first category of billing network.

There is a mixture of modern, relatively modern and old generation billing systems in the network. In Kaduna, the Deck-Alpha system which is a modern

billing machine from the point of view of speed, function and the fact that it is an open system. Openness is a billing system that can run on quite a number of operating system platforms. It can work with a wide range of pheripherals and can function or accept a wide range of application softwares.

2.14 TYPES OF BILLING INPUT

Billing inputs are raw data put together to make bills of which the different bills includes.

ADVISORY NOTE:- This is when a territory advices the MIS department about a new line given to a subscribers in it's zone; including the name, Address, date of issuance or change of ownership. Also recovery of lines can be done through Advisory note.

METER READINGS:- This is reading of meters attached to different operation and maintenance center in territorial offices. This helps in the interpretation of bills.

TICKETED CALLS:- This is the interpretation of bills of local calls that are being made with the assistance of operators. This is gradually been faced out with the introduction of the card phone system.

ADJUSTMENTS:- This is when MIS is being advised to credit or debit

the bill of a subscriber that is, if a customer has been credited through omission or commission, adjustment are carried out.

INTERNATIONAL CALLS:- This is the bills of calls made to other countries. This is read and merged with these other inputs.

2.15 BILLING PROCEDURE

Like any other process, NITEL Ltd has the following procedures for billing its subscribers.

1.   Analogue exchange

2.   Digital exchange

Each of these procedures has meters attached to them. There are two separate meters used for Trunk calls and local calls. These are further subdivided into the following

a)   Local calls

b)   Trunks calls

c)   Combination of local & trunk calls

The Analogue exchange is a process that is used for recording the meter

reading by snapping the meter guide that freezes the meter reading. This process reduces error on the part of the reader.

Digital exchange is a process of taking the meter reading manually.

METER DUMPS. Contains the previous meter reading (PMR) and present meter reading (PMR) printed every month. The previous meter reading is deducted from the present meter reading to get the total units consumed, which is used to multiply by the rate. The rate, is determined by the radial distances in kilometer, this is shown bellow.

Telephone calls charge per pulse effective date?

a)   Local calls

        Pulse rate: Every three minutes N1.80 effective   1/8/92

b)   STD/Trunk call charges

        Trunk Calls are Inter city calls that pass through different primary/secondary center of different radial distances. The radial distances determine the pulse rate and charges. There are 8 charge bunds, viz:-

Radial Distance /km	Pulse rates in seconds	Pulse unit in minutes +	Charge/minute N
0 - 50	60	1	1.80
51 - 90	30	2	2.80
91 - 160	20	3	4.20
161-250	15	4	5.60
251-400	12	5	7.00
401-600	9	6.7	9.34
601-700	7	8.5	11.99
Above 700	6	10	14.00

It is important to note the following;

a)   Peak period is from 7.00 am - 7 pm, off peak period is from 7.00 pm - 7.00 am call with off-peak period enjoy 50% document on calls charges.

b)   See the pulse rate column above for pulse interval of STD calls.

c)   Rates applicable to call offices/call are subjected to a minimum charge of 3 minutes.

d)   Trunk calls for NITEL Plc coin boxes are same   with charge call rates per minute, other coin box operators may have different rates.

International Telephone calls. The International Telephone calls between Nigeria and other countries are charged per minutes. The charges were based on four regional/continental groups before the introduction of NITEL card phone prices.

These are;

Zone	Charge/minute
Europe	825
America	825
Asia/Oceanic	1050
Africa	57

Also important to note are the following;

a)   There is no person to person calls on operator assisted calls.

b)   Sub-charges for persons to person calls are cancelled.

c)   Only station to station calls provided by NITEL plus in public centers and operators assistance centers.

d)   Minimum chargeable duration is 3 minutes on public center and operator assisted positions.

In the billing process there is Access charge. This is applied to customers that have telephone lines. These are as follows:-

a) Private   -   N100.00

b) Business   -   N200.00

c) Government   -   N200.00

Presently, the card phone system has the following prices:-

Units	Amount
	N
80	252.00
200	630.00
400	1,260.00
1000	3,150.00

From the above, only the last two can be applicable to international calls.

Generally on telephone calls, the more the distance the more the pulses and the more the units consumed.

Bellow is the form used to indicate the telephone lines current meter reading for billing

NITEL LIMITED FORM R I

Tel No range - 00000 - 99999

Telephone lines limit meter reading for billing

Exchange code.......... state.......... month......... year......

Tel. No.	Previous M.R	Current M.R	Units Charg-eable	Tel. No.	Previous M.R	current M.R	Units charge-able

The above table is used for processing the bills and it is typical to Analogue exchanges.

Magnetic tape device is also used in the billing process, as well as the magnetic disk device. These contains the records of the meter readings which are usually compiled in the terminal offices and sent to the MIS Units of zonal headquarters

CHAPTER THREE

3.0   SYSTEM ANALYSIS AND DESIGN

System analysis is defined as the method of determining the most effective ways of computer usage to complement other resources to perform tasks that meets the information requirements of any organisation.

System analysis was initially development as a specialized part of an organisation and method in which there is a systematic analysis of procedural problems in order to produce alternatives that will be more suitable, technically and economically.

Thus, for the purpose of this study, system analysis is concerned with the conversion of the objectives of the management information system (MIS) department as regards:

*   The nature and scope of the problem

*   Detailed study of current system

*   Procedures of how imformation and data are obtained,

processed and controlled

*   Strength and weakness of the existing system will be

spelt out.

*   Objectives of the new or proposed system will be

determined to enable the work from the requirement

specification to produce a system specification.

Thereby satisfying the basic characteristics of a system which includes:-

*   Reliability

*   Accessibility

*   Flexibility

*   Simplicity

*   Economical

*   Time.

Conclusively from the observations of the methods and strategies of

services rendered and the billing of subscribers in NITEL LIMITED Kudana,

there is a serious need for an up graded software for the operations in MIS

department.

3.1   SCOPE OF THE FEASIBILITY STUDY

The scope of data collected for he feasibility study is limited to the

following areas:-

i.   Subscriber data

ii.   Method of data processing

iii.   Method of data organisation and storage

iv.   Efficiency and effectiveness

v.   Security and safety of files

vi.   Time constraints

vii.   Information dissemination

3.2   FEASIBILITY STUDY

Feasibility study of this work involves the preliminary investigation embarked upon to prove the fact that, the proposed upgraded software is desirable and of benefit. The objectives accomplished by working on the project feasibility inlcudes the following:-

*   The project requirement was classified and understood. This was achieved by detailed explanation to the management of NITEL LIMITED; what is actually being carried out in the use of the new software, the requirements and the importance of accurate billing so as to save embarasement on both the side of the subscriber and NITEL.

*   Also the project size was determined. This became necessary so as to enable financial estimation of the   human resources required to develop the

system.

*   The cost analysis of the proposed system and staff training was assessed.
The benefits of the proposed system were also made clear to the management.

*   The technical, financial and operational feasibility of alternative
approaches was also considered.

*   The findings of the existing system and advantages of the proposed
system were reported to the management with recommendation out lining the
benefits of the proposed   system.

3.3   TESTING THE PROJECT FEASIBILITY

This would be achieved with the execution of the under listed steps:-

ECONOMIC FEASIBILITY

This would be undertaken to access the cost of implementing the
proposed system along side the benefits derided in implementing the system.

TECHNICAL FEASIBILITY

This test seeks to clarify if the proposed project can be done with current
equipment, upgraded software technology and available personnel when trained.

OPERATIONAL FEASIBILITY

This relates to the workability of the proposed system when developed

and installed.

3.4   ANALYSIS OF THE EXISTING SYSTEM

The operation of the existing system comprises of preparing or producing the bills of subscribers using a commercial language known as COBOL (Common Business Oriented Language). It is the most widely used Commercial and Business Language and the fact that about 80% of all computer usage is of this type which reflects it's importance to NITEL. It was intended that any program written in COBOL would be compiled and within reason, run on any computer. This has not worked completely in practice.

The MIS department of NITEL caries out an in house development of program using COBOL, in the billing aspect. The MIS department is the last bus stop of NITEL organisation for it's operation. Principally, it performs the following functions;

*   Maintenance of records in accordance with the requirement of the company.

*   Provision of bills for the subscribers so that when this bills are paid, they proceeds are in turn used for the efficient running of the company's operations.

*   Provision of storage facilities for NITEL bills.

3.5   PROBLEMS OF THE EXISTING SYSTEM

Based on the foregoing analysis, the existing system which is the use of

COBOL Language (Program) for billing of NITEL subscribers, has suffered the

following problems:-

*   Poor Communication

There is poor communication some times when billing   inputs   are

brought from territorial offices to MIS zonal offices resulting to problems

associated with data entry.

*   There is delay in the production of bills.

*   Inadequate or improper system design since the existing   system is in

house developed; the scope of the existing system is limited.

*   Lack of user involvement in the development of the program constitutes

a problem to the operation units.

*   The COBOL program (Current system) is too cumbersome thereby

making the operation not too easy.

*   The existing system is not centrally controlled.

* The security attached to the program, is easily beaten the MIS staff.

3.6   DESIGN OF THE PROPOSED SYSTEM

With regard to the many short comings created by the existing system, there is need for a deliberate scientific effort to develop the mode of operation and management of MIS department. The proposed system tends to eradicate or reduce to the bearest minimum all the existing system.

The choice of the programming Language is an important factor that has been considered while developing the system. Dbase IV Language is the version of database management system used.

The system in all has three main functions:-

*   Data Entry Routine:

This is the most basic part of any database system. It is used to enter data into the database file. It also involves the creation of formatted screen displays and verification maintenance of necessary index file.

*   Retrieval Routine

This routines are different from the data entry routine because they raise the problem of locating data after they have been entered into the data base file. It is more complicated than simple entry, because one often forgets

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how the data were entered. The key to retrieval routine is that, the user should have as much flexibility as possible in finding information stored in the files.

* <u>Report Generation</u>

Here individual subscriber bills are printed out, including other necessary printed materials needed by the management based on the data in the files. The use of the password is introduced into the system so that unauthorized file for any dubious practices. This is to ensure that fictitious transactions are not passed to any subscriber's bill or even erasing of any information.

3.7 <u>BENEFITS OF THE PROPOSED SYSTEM</u>

The advantages of the proposed new computer based MIS department for billing will include the following:-

i. Fast means of data processing and presentation of information

ii. Reduction in staff numbers within the personnel functions.

iii. Reduction in time spent in processing data and information presentation.

iv Reduction in space occupied by files and file cabinets.

v. Reduction in time spent in searching and storing data.

vi. High level of accuracy.

The system must be able to handle large amount of data at the bearest minimum time.

* <u>Security</u>:-

Data must now be protected from unauthorized users.

* <u>Time</u>:-

The system must produce quite a number of bills in a limited amount of time.

* <u>Data Integration</u>:-

An Integrated collected record with any redundancy is eliminated.

* <u>Simplicity</u>

The system must be simplified enough for easy and quick understanding.

* <u>Reliability</u>:-

The system must be reliable in terms of having it's operators consistent.

* <u>Repetitiveness</u>:-

The system must be able to process and produce bill repeatedly.

Therefore, the general conception of the system design stage, is to change the conceptual design into detail system for actual implementation.

3.8   OUTPUT SPECIFICATION

Output can be defined as the result of processed data generated by a system. In other words, it is the information arising from the processing of data generated by the system. The need for computer output is to primarily communicate to the users or other systems the end result of the processing.

Generally, there are two basic outputs from the computer data processing:-

*   Hard copy

*   Soft copy

Hard copy outputs are those that are generated on continuous stationery and are readable.

Soft copy output on the other hand is generated on magnetic media. It is used for subsequent data processing cycles and are not readable.

The starting point of the design process of the output is the identification of the type of output the system must produce. For the purpose of this project, the desired output of the proposed system is to generate output on billing

statements for NITEL subscribers that are

* Private line bills

* Business line bills

* Government line bills.

3.9 INPUT SPECIFICATION

The input that is the mode of entering data into the system is the key element necessary for the achievement of the output expected to be generated by the proposed system. Principally it serves as the contact point of the users with the system and of course prone to errors. Given this consideration, input design should be made to achieve the objectives of:-

* Cost effectiveness

* Acceptability and clarity

* Highest level of accuracy

The foregoing points therefore informed and in fact came to be in designing the input for the proposed system that is mainly in an interactive mode. This is done through dialoging with the outline system in which the computer system prompt for entry. In data entry, coding method, words, ideas or relatioship are express by a code to reduce input task, control errors and speed

the entire process. Codes, therefore, allows for fewer details without loss of information. In addition the input is designed in such away to reject non-existing codes and in-appropriate data entry.

The input data serves as a source document and contains the particulars of the clients, viz: Name, account number, registered address, mailing address, line of business client relationship type, initial deposit or incurred bill.

3.10 CHOICE OF LANGUAGE

Computer Programming Languages are developed with the primarily objective of facilitating a large number of people to use computers without the need to know in detail the internal structure of the computer. Languages are matches to the type of operations to be performed in algorithms for various applications. These languages are designed to be machine independent. The proposed system for the billing of NITEL subscribers has been designed to be complete data base systems. Database management users have logical relationships to link integrated data of different types. In essence, the application software constructs, expands and is maintained in the database. It also provides an interface between the user and the data in a manner that enables the user to record, organise, select, summarise, extract reports on and otherwise

manage data contained in a database. The fundamental objective in database technology is to treat data as an organisational resource and as integrated whole, thereby allowing data to be protected and organised separately from other resources.

The benefits derivable from the use of database system include the following:-

*   Maintenance:-

It is easier to maintain one database as it allows centralized control rather than maintaining two or more separate files containing many data and re-organising the physical data. In the case of data base system, any change in data, is easily accommodated simply by a change in database management system without necessarily changing the application program.

*   Data Integrity:-

Data integrity and consistency is easily maintained in database management due to centralization of control. It implies that, there will be high reliability of data processing system in a file processing environment.

*   Central Control:-

Data and operation in data base environment is centrally controlled and

this results in better management of data, consequently enforcing standards for all the data base users.

    *   <u>Data Independence</u>:-

As more information is required, there is need for application to improve the usage. Also the changing requirements will influence the need to use stored data differently. If any change occurs to the data records during the life of the file, then all programs accessing these data must be changed. However, database management system provides data independence of program. Data independence is the insulation of application programs from the changing aspects of physical data organisation. This seek to allow changes, in the content and organisation of physical data without reprogramming of the application as well as allowing for modification to application program without re-organising the physical content of the data, because each application program interfaces with the database management system rather than directly with the database in data base environment, meaning that, any change to the data are accommodated by changes to the application program being necessary.

3.11 DBASE IV

Dbase IV was designed to provide the user and developer with most if not all, the features of the many competing database products and the wide array of products have been developed as add-ons for Dbase III and Dbase III+.

Dbase IV is said to be one of the most popular and powerful database management systems available for personal computers. Dbase IV has been favoured because it organises data unto data base file.

A database file is a collection of related records. It is in the form of a two dimension table consisting of a number of rows and columns. Each row represents a record in the database file, and each column represent field in the record of the data file. Therefore, a database file is made up of some components that are recorded and filed.

A record is all the information about a single item.

A field is a unit of information within each record of a database file.

Dbase IV known for it's different methods of processing data stored in it's database files.

3.12 FILE DESIGN

In file design, we will define and describe all the files that are used in the

system. We will also spell out the contents and the structure of each of the file used in the new system. The system has been designed and developed to run on the database files in a database management system environment.

The proposed system has two basic database files namely;

1. CUSTOMER DBF FILE

2. CATEGORY DBF FILE.

The Customer database file contains all the details on customers' line, personal data, banks, desire use of the line, customer's address, location address, total transaction in relation to total number of units consumed, cost and the general balance of the customers account. The structure is thus presented bellow;

S.No.	Field Name	Field Type	Field Width
1.	LINE	CHARACTER	13
2.	SNAME	CHARACTER	20
3.	FNAME	CHARACTER	20
4.	ONAME	CHARACTER	20
5.	OCCUP	CHARACTER	20
6.	BANKS	CHARACTER	20

7	REF	CHARACTER	60
8	USE	CHARACTER	1
9	CADDR	CHARACTER	45
10	LADDR	CHARACTER	45
11.	CONSUME	NUMERIC	6
12.	BALANCE	NUMERIC	10
13.	COST	NUMERIC	10

CATEGORY Database file contain information relating to the customer's codes, categories of customers and rate charged per each category. The structure is thus displayed bellow;

S.No.	Field Name	Field Type	Field Width
1.	CODE	CHARACTER	1
2.	CATEGORY	CHARACTER	10
3.	RATE	CHARACTER	4

CHAPTER FOUR

4.0   SYSTEM IMPLEMENTATION:-

This is the process of coding, testing and documenting programs in the system.   This process takes the largest percent of the overall systems development effort. It involves development of conceptual requirement and the overall objectives into the physical reality where actualising of the proposed system is achieved.

It is at this stage that the user can be pre-emptive of the success of the system thereby giving room to confidence building in the entire system.

The proper analysis of the task of implementation starts with the specification of the system requirement followed by system testing. After successful testing of the new system, the mode of system conversion is described.

4.1   SYSTEM REQUIREMENT

The system requirement has to do with the computer configuration necessary for the new system. The collection of hardware that forms a complete computer system is referred to as computer configuration. The choice of

computer configuration is usually fashioned to suit both the current and the likely future needs of the organisation with respect to the volume and type of data to be processed. Given the complexity and dynamism of the operation of the system being developed, a computer with higher speed and larger storage space is required. Expectedly, this would accommodate the future expansion need by North west of NITEL LIMITED.

HARDWARE SPECIFICATION & ACCESSORIES

Mainframe

Monitor

Mass storage option

Hard disk Expandable

Output device

101 Eenhanced keyboard

(UPS) uninterupted power supply

Consumables

EPSON LQ 2170 (Printer)

OPERATING SOFTWARE

DOS 6.2 or Windows

DBase IV

Microsoft word

COST & BENEFIT ANALYSIS OF THE NEW SYSTEM

System Analyst (Analyst for 1 week)	25,000	
Software Installation	18,000	
2 Mainframes and	2,000,000	
20 Monitors with keyboards	700,000	
Stationary	100,000	
EPSON LQ 2170 (Printer)	1,300,000	
UPS (Uninterupted Power Supply)	490,000	
Misceallaneous	100,000	4,663,000

OPERATING COST OF THE NEW SYSTEM

Maintenance & other services	18,000
Labour cost (@ N3,500/month for 6 months)	21,000
Training of staff (for 4 weeks)	100.000

System operator (for one month)   <u>15,000</u>   <u>154,000</u>

GRAND TOTAL   =   <u>4,817000</u>

4.2   SYSTEM TESTING

Carrying out system testing during the implementation stage, serves as confirmation of the correctness of the system. It provides the opportunity to prove to the user that the system is in a perfect working stage as envisaged.

The system testing therefore is a key stage in system implementation. It also involves the use of test data on the system, of which, at the end, it is confirmed that the system is working efficiently.

The result of the testing is shown on the various is displayed in the documentation of the new system.

4.3   SYSTEM CONVERSION

This is the transformation of the existing system to the newly developed system, there is a need to carry out:-

*   File conversion which requires changing the existing system file to the format and content required by the new system.

*   File set-up is the process of setting-up the converted files on the

computer.

*   Change over which is the full replacement of all the old procedures by the new ones.

Change over may be achieved in a number of ways. The most common methods are:-

1.   Direct change over:- This method is the complete replacement of the old system by the new, in one more. It is a bold move, which should be undertaken only when everyone concerned has confidence in the new system.

2.   Parallel running:- This means processing current data by both the old and new systems to cross-check the results.

3.   Pilot Running:- This is similar in concept to   parallel running. Data from more previous period for the whole or part of the system is run on the new system after results have been obtained from the old system and the new results are compared with the old.

4.   Staged change over:- This is when the new system is being introduced piece by piece. A complete part, or logical section, is committed to the new system while the remaining parts or sections are processed by the old system. Only when the selected part is operating satisfactorily is the remainder transferred.

For this study, the <u>parallel running and staged change over</u> can both be effectively used, for the new system.   This is because, in the case of parallel running.

*   The main attraction is that, the old system is kept   alive   and operational, until the new system has been proved for at least one system cycle, using full live data in the real operational environment of   place,   people, equipment and time.

*   It allows the results of the new system to be   compared with the old system before acceptance by the user, thereby promoting user confidence.

In the case of the staged change over:-

*   It reduces the risks inherent in a direct change over of the whole system.

*   Enables the analyst and users to learn from mistakes made as the change over progresses.

4.4 POST IMPLEMENTATION REVIEW

Impact Evaluation:- Having completed the system implementation and conversion exercise, there is the need for a review of the system. This essentially has to do with the maintenance of the system, against environmental changes likely to affect either the computer or other parts of the computer Computer or other parts of the computer based system. The provision for review exercise may result in improvement of the system functions the new system to ensuring the accuracy and the efficiency of system prior to the commencement of live operations. At this stage, a thorough examination of the conceptual design and the physical design are carried out.

Event Logging:- In the case of controlling the new system, whenever a method is adopted for the change over from an old to a new method, a high priority must be given to establishing controls, by value or quantity in order to maintain the quantitative integrity of the system.

Attitude survey:- Users should keep overall control records incorporating both computer and clerical control figures to prove that the change over has not corrupted this integrity.

This aspect of control at change over cannot be over emphasised since not existing systems or their control methods are in a good sate of order.

4.5 DOCUMENTATION MANUAL

The program is written in dbase IV tailored towards the result from investigation of the existing system of MIS for billing in NITEL LIMITED< Northwest zone, Kaduna. This program will replace the old program (COBOL) being used for billing and also to maintain the database file of subscribers.

The entire program is menu driven, at the running of the program a menu is displayed on the screen consisting of five main options as below.

1. Customer registration

    a) New registration details

    b) View registration details

    c) Change registration details

    d) Delete registration details

    e) List registration details

2. Monthly Unit Consumption

    a) New unit consummed

b)   List unit consumed

c)   Change unit consumed

3.   Unit Rate Update

a)   View unit rate

b)   Edit unit rate

4   Report Production

a)   Individual customer report

b)   General customer report.

5.   System Exit.

The above listed options are therefore sub-programs to the menu program that are executed when the desired option is chosen from the menu.

CHAPTER FIVE

SUMMARY, CONCLUSSION AND RECOMMENDATION

5.1 SUMMARY

This project attempts to review the existing system, taking into consideration the observed constraints and thereby designing a new system capable of reducing, if not, eliminating the difficulties and problems encountered by the users and the beneficiaries of the system with the view to enhancing efficiency and productivity while meeting up the set down organisational targets and objectives. To accomplish the project objectives therefore, emphasis was placed on reviewing the primary and secondary data.

Having given the background introduction of the Nigerian Telecommunications Ltd, The project has observed that the under mentioned facts and the problem existing in on the system, there was a need to reverse and get out of the precarious situation and thus the need for the entire work.

The observed problem:

1. Some of the work is still being done manually.

2. The computer system units are not adequate.

3. Fraudulent practices or manipulations by exchange staff.

4.   Inadequate spread of the Management Information System departments in the country.

5.   Need for total realisation of subsequent payments on the consumed services.

6.   Increasing complexity of subscribers.

6.   Increasing operation, departmentalisation and work specialisation with their attendant problems of communication, management information and decision making.

The preceding chapter gave the details of the technical jargons, operation and bill in procedures in use in the case study. The main body of the project is contained in chapters three and four where the description of the proposed system was made, the output and input requirement specified, the file design, choice of language, system implementation system testing system conversion and post implementation review stated.

5.02 CONCLUSION

The fast changing and dynamic environment that characterises the present day Nigeria and global craze for computer technology into every facet of

business operation makes the choice of the topic for this project relevant today and in the distant future.

The versatility and efficiency of a computer system given its capacity to process large data within a very short-time and with greater degree of accuracy permits going-concerns to be able to cope with challenges of time by having access to up-to-date and reliable data; save cost and provide the correct background Management information System.

The realisation of the qualities of automation and also the demand for excellence from NITEL Ltd Management accepted the proporsal for designing the new system. The new system is aimed at the automation of the Billing of subscribers, this will therefore, help NITEL Ltd to achieve the following benefits:-

(i)   Enhanced efficient operation in the Billing process, not withstanding the increasing volume of subscribers.

(ii)   Speedy processing and generation of necessary reports.

(iii)Reduce attendant problems of communication, delay in management information and decision making.

(iv)   Increased security in terms of data maintenance and other Outstanding bills.

(v)   Easy changes /modification.

These benefits will go along way to help and even be more relevant, considering that billing has assumed a more focal position management information System in NITEL ltd. Further, given that, Management Information System helps in a greater extent in decision making and activities are today geared towards achieving growth, profitability and good quality services, the benefits and efficiency of the new system are thus practical.

5.03   RECOMMENDATIONS

Against the background of the merits of computerisation and the benefits realisable from the newly designed system, the system needs to be viewed as a package and be absolute. Also the hardware and soft ware requirement such as minimum of 2Nos. Mainframe,   20Nos. Monitors, Mass storage option, Hard disk Expandable, Output device, 2Nos. 101 Enhanced keyboard, UPS (un interupted power supply), Consumables, EPSON LQ 2170 (Printer). Also the software requirement earlier recommended such as processor with DOS 6.2 or Windows '98, DBase IV, Microsoft word and other output devices should be in place.

Adequate provision should also be made for training of the users. Training spanning over a period of between three to four weeks is highly recommended.

Although, the necessary procedures and test have been carried out with the result confirmed satisfactory and efficient, it is recommended that same be carried out by the organisation on parallel-run at least for one system cycle. It is hoped that the design will serve the present and possibly future requirement of NITEL Ltd.

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```
┌─────────────────────────────────────────────────────────────────┐
│              ┌─────────────────────┐                              │
│══════════════│ NITEL PLC, KADUNA │══════════════════════════════ │
│              └─────────────────────┘                              │
│                                                                   │
│        CUSTOMER BILLING SYSTEM - MAIN MENU                        │
│        ─────────────────────────────────────                     │
│                                                                   │
│  ┌──────────────────────────────────┐   ┌──────────────────────────────────┐
│  │ CUSTOMER REGISTRATION DETAIL      │   │ MONTHLY UNIT CONSUMPTION         │
│  ├──────────────────────────────────┤   ├──────────────────────────────────┤
│  │ A │ NEW REGISTRATION DETAIL       │   │ F │ NEW UNIT CONSUMED            │
│  │ B │ VIEW REGISTRATION DETAIL      │   │ G │ LIST UNIT CONSUMED           │
│  │ C │ CHANGE REGISTRATION DETAIL    │   │ H │ CHANGE UNIT CONSUMED         │
│  │ D │ DELETE REGISTRATION DETAIL    │   └──────────────────────────────────┘
│  │ E │ LIST REGISTRATION DETAIL      │                                       
│  └──────────────────────────────────┘   ┌──────────────────────────────────┐
│                                          │      UNIT RATE UPDATE            │
│  ┌──────────────────────────────────┐   ├──────────────────────────────────┤
│  │        REPORTS PRODUCTION         │   │ I │ VIEW UNIT RATE               │
│  ├──────────────────────────────────┤   │ J │ EDIT UNIT RATE               │
│  │ K │ INDIVIDUAL CUSTOMER REPORT    │   └──────────────────────────────────┘
│  │ L │ GENERAL CUSTOMER REPORT       │                                       
│  └──────────────────────────────────┘   ┌──────────────────────────────────┐
│                                          │ Q │        SYSTEM EXIT           │
│                                          └──────────────────────────────────┘
│                                                                   │
│     MAKE YOUR SELECTION (Press A, B, C, .... L, or Q):            │
└─────────────────────────────────────────────────────────────────┘
```

```
========================================[ NITEL PLC, KADUNA ]========================================

                              NEW REGISTRATION DETAIL
                              ==========================


LINE NUMBER (or (999)-9999999 to exit): (066)-221133

      SURNAME                  FIRST NAME              OTHER NAMES
SAKOMA                    HENRY                   GAMBO

CONTACT ADDRESS: NSTF, EBITU UKIWE ROAD, MINNA

OCCUPATION: FINANCIAL CONTROLLER    BANKERS: INTERCITY BANK

REFREE (NAME & ADDRESS):
   MR MATHEW AFILOMI NUHU

TYPE OF USE ("1" - PRIVATE, "2" - BUSINESS, "3" - GOVERNMENT): 2

LOCATION ADDRESS: NO. 1, KUTA ROAD, MINNA
===================================================================================================
                         TO SAVE DATA (Y/N):
===================================================================================================
```

```
┌─────────────────────┐
│ NITEL PLC, KADUNA │
└─────────────────────┘

          VIEWING REGISTRATION DETAIL
          ═══════════════════════════


LINE NUMBER (or (999)-9999999 to exit): (066)-221133

    SURNAME              FIRST NAME           OTHER NAMES
SAKOMA                   HENRY                GAMBO

CONTACT ADDRESS: NSTF, EBITU UKIWE ROAD, MINNA

OCCUPATION: FINANCIAL CONTROLLER    BANKERS: INTERCITY BANK

REFREE (NAME & ADDRESS):
   MR MATHEW AFILOMI NUHU

TYPE OF USE ("1" - PRIVATE, "2" - BUSINESS, "3" - GOVERNMENT): 2

LOCATION ADDRESS: NO. 1, KUTA ROAD, MINNA

          VIEWING CUSTOMER DETAIL - PRESS ANY KEY
```

```
================== NITEL PLC, KADUNA ==================

              EDITING REGISTRATION DETAIL
              =========================

LINE NUMBER (or (999)-9999999 to exit): (066)-221133

    SURNAME              FIRST NAME          OTHER NAMES
SAKOMA                   HENRY               GAMBO

CONTACT ADDRESS: NSTF, EBITU UKIWE ROAD, MINNA

OCCUPATION: FINANCIAL CONTROLLER     BANKERS: INTERCITY BANK

REFREE (NAME & ADDRESS):
   MR MATHEW AFILOMI NUHU

TYPE OF USE ("1" - PRIVATE, "2" - BUSINESS, "3" - GOVERNMENT): 2

LOCATION ADDRESS: NO. 1, KUTA ROAD, MINNA

              TO SAVE CHANGES (Y/N):
```

```
╔═══════════════════════════════╗
║  NITEL PLC, KADUNA  ║
═══════════════════════════════════════════╩═══════════════════════╩═══════════════════════════

                    DELETING REGISTRATION DETAIL
                    ═══════════════════════════════

E NUMBER (or (999)-9999999 to exit):  (066)-221133

    SURNAME                  FIRST NAME              OTHER NAMES
OMA                       HENRY                   GAMBO

TACT ADDRESS: NSTF, EBITU UKIWE ROAD, MINNA

UPATION: FINANCIAL CONTROLLER     BANKERS: INTERCITY BANK

REE (NAME & ADDRESS):
MR MATHEW AFILOMI NUHU

E OF USE ("1" - PRIVATE, "2" - BUSINESS, "3" - GOVERNMENT): 2

ATION ADDRESS: NO. 1, KUTA ROAD, MINNA
═══════════════════════════════════════════════════════════════════
              TO DELETE THIS RECORD (Y/N):
```

```
================== | NITEL PLC, KADUNA | ======================

                    NEW UNIT CONSUMED
                    ===============


NUMBER (or (999)-9999999 to exit): (066)-221133

SURNAME                    FIRST NAME           OTHER NAMES
MA                         HENRY                GAMBO

TION ADDRESS: NO. 1, KUTA ROAD, MINNA

GORY OF USERS: BUSINESS               CHARGES RATE: #1.80
_____

LS OF CONSUMPTION:
T CONSUMED:      500       CONSUMPTION CHARGES: #        900.00

ANCE: #          0.00        TOTAL AMOUNT: #            900.00
===============================================================
                    TO SAVE DATA (Y/N):
```

```
                    ┌─────────────────────┐
                    │ LIST UNIT CONSUMED  │
                    └─────────────────────┘

 ╔══════════════════╦══════════════════════════╦═══════════════════╗
 ║  INE NUMBER      ║     CUSTOMER'S NAME      ║  UNIT CONSUMED    ║
 ╠══════════════════╬══════════════════════════╬═══════════════════╣
 ║ )62)-238464      ║   KJHUYHG K.             ║        100        ║
 ║ )62)-228088      ║   U8IIJYU Y.G.           ║         0         ║
 ║ )66)-221133      ║   SAKOMΛ H.G.            ║        500        ║
 ║                  ║                          ║                   ║
 ║                  ║                          ║                   ║
 ║                  ║                          ║                   ║
 ║                  ║                          ║                   ║
 ╚══════════════════╩══════════════════════════╩═══════════════════╝

      LISTING UNITS CONSUMPTION - PRESS ANY KEY
```

```
===============| NITEL PLC, KADUNA |===============
               CHANGE UNIT CONSUMED
               ==================

LINE NUMBER (or (999)-9999999 to exit): (066)-221133

     SURNAME              FIRST NAME          OTHER NAMES
SAKOMA                  HENRY               GAMBO

LOCATION ADDRESS: NO. 1, KUTA ROAD, MINNA

CATEGORY OF USERS: BUSINESS               CHARGES RATE: #1.80
_____

DETAILS OF CONSUMPTION:
  UNIT CONSUMED:      500    CONSUMPTION CHARGES: #      900.00

  BALANCE: #       900.00        TOTAL AMOUNT: #      1,800.00
============================================================
               TO SAVE DATA (Y/N):
```

```
┌─────────────────────────────────────────────┐
│         ┌────────────────────┐                │
│         │ NITEL  PLC  KADUNA  │                │
│         └────────────────────┘                │
│                                               │
│            VIEWING  UNIT  RATE                 │
│            ──────────────────                  │
│                                               │
│   CODE       CATEGORY        RATE             │
│  ─────────────────────────────────           │
│    1         PRIVATE         1.80             │
│                                               │
│    2         BUSINESS        1.80             │
│                                               │
│    3         GOVERNMENT      1.80             │
│                                               │
│  ─────────────────────────────────           │
│                                               │
│    PRESS  ANY  KEY  TO  CONTINUE              │
│                                               │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────────┐
│  ┌──────────────────┐                             │
│══│ NITEL PLC KADUNA │═════════════════════════════│
│  └──────────────────┘                             │
│                                                   │
│          EDITING UNIT RATE                        │
│          ─────────────────                        │
│                                                   │
│    CODE        CATEGORY        RATE               │
│   ─────────────────────────────────────           │
│     1          PRIVATE         1.80               │
│                                                   │
│     2          BUSINESS        1.80               │
│                                                   │
│     3          GOVERNMENT      1.80               │
│                                                   │
│   ─────────────────────────────────────           │
│                                                   │
│       TO SAVE CHANGES (Y/N) :                     │
│                                                   │
└─────────────────────────────────────────────────┘
```

NITEL PLC KADUNA

EDITING UNIT RATE

CODE	CATEGORY	RATE
1	PRIVATE	1.80
2	BUSINESS	1.80
3	GOVERNMENT	1.80

TO SAVE CHANGES (Y/N) :

NITBILL.PRG

```
set talk off
set stat off
set safe off
set scor off
set date brit
do whil .t.
  clea
  @ 1,4 to 24,76 doub
  @ 1,31 say 'NITEL PLC, KADUNA'
  @ 0,30 to 2,48 doub
  @ 4,22 say 'CUSTOMER BILLING SYSTEM - MAIN MENU'
  @ 5,22 to 5,56 doub
  @ 22,5 to 22,75 doub
  @ 6,43 to 21,43 doub
  @ 6,7 to 14,40
  @ 7,10 say 'CUSTOMER REGISTRATION DETAIL'
  @ 8,8 to 8,39
  @ 9,11 to 13,11
  @ 9,9 say 'A'
  @ 9,13 say 'NEW REGISTRATION DETAIL'
  @ 10,9 say 'B'
  @ 10,13 say 'VIEW REGISTRATION DETAIL'
  @ 11,9 say 'C'
  @ 11,13 say 'CHANGE REGISTRATION DETAIL'
  @ 12,9 say 'D'
  @ 12,13 say 'DELETE REGISTRATION DETAIL'
  @ 13,9 say 'E'
  @ 13,13 say 'LIST REGISTRATION DETAIL'
  @ 6,46 to 12,73
  @ 7,48 say 'MONTHLY UNIT CONSUMPTION'
  @ 8,47 to 8,72
  @ 9,50 to 11,50
  @ 9,48 say 'F'
  @ 9,52 say 'NEW UNIT CONSUMED'
  @ 10,48 say 'G'
  @ 10,52 say 'LIST UNIT CONSUMED'
  @ 11,48 say 'H'
  @ 11,52 say 'CHANGE UNIT CONSUMED'
  @ 16,7 to 21,40
  @ 17,14 say 'REPORTS PRODUCTION'
  @ 18,8 to 18,39
  @ 19,11 to 20,11
  @ 19,9 say 'K'
  @ 19,13 say 'INDIVIDUAL CUSTOMER REPORT'
  @ 20,9 say 'L'
  @ 20,13 say 'GENERAL CUSTOMER REPORT'
  @ 13,46 to 18,73
  @ 14,52 say 'UNIT RATE UPDATE'
  @ 15,47 to 15,72
  @ 16,50 to 17,50
```

```
@ 16,48 say 'I'
@ 16,52 say 'VIEW UNIT RATE'
@ 17,48 say 'J'
@ 17,52 say 'EDIT UNIT RATE'
@ 19,50 to 21,50
@ 19,46 to 21,73
@ 20,48 say 'Q'
@ 20,56 say 'SYSTEM EXIT'
@ 23,14 say 'MAKE YOUR SELECTION (Press A, B, C, .... L, or Q):'
do whil .t.
  select1=' '
  @ 23,65 get select1 pict '!'
  read
  if select1 $ 'ABCDEFGHIJKLQ'
    exit
  endi
endd
do case
  case select1='A'
    do nrd
  case select1='B'
    do vrd
  case select1='C'
    do crd
  case select1='D'
    do drd
  case select1='E'
    do lrd
  case select1='F'
    do nuc
  case select1='G'
    do luc
  case select1='H'
    do cuc
  case select1='I'
    do vur
  case select1='J'
    do eur
  case select1='K'
    do icr
  case select1='L'
    do gcr
  othe
    exit
endc
endd
clea
retu
```

NRD.PRG

```
use customer
```

```
do whil .t.
 clea
 mline=spac(13)
 @ 2,5 to 24,74 doub
 @ 2,31 say 'NITEL PLC, KADUNA'
 @ 1,30 to 3,48 doub
 @ 4,28 say 'NEW REGISTRATION DETAIL'
 @ 5,28 to 5,50 doub
 @ 22,6 to 22,73 doub
 @ 7,8 say 'LINE NUMBER (or (999)-9999999 to exit):'
 @ 7,48 get mline pict '(999)-9999999'
 read
 if mline='(999)-9999999'
  exit
 endi
 loca for line=mline
 if foun()
  @ 23,16 say 'ATTEMPT TO DUPLICATE LINE NUMBER - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
 endi
 stor spac(20) to msname,mfname,moname,moccup,mbanks
 stor spac(45) to mcaddr,mladdr
 mref=spac(60)
 muse=' '
 @ 9,12 say 'SURNAME'
 @ 9,36 say 'FIRST NAME'
 @ 9,57 say 'OTHER NAMES'
 @ 10,8 get msname pict '@!'
 @ 10,31 get mfname pict '@!'
 @ 10,54 get moname pict '@!'
 @ 12,8 say 'CONTACT ADDRESS:' get mcaddr pict '@!'
 @ 14,8 say 'OCCUPATION:' get moccup pict '@!'
 @ 14,44 say 'BANKERS:' get mbanks pict '@!'
 @ 16,8 say 'REFREE (NAME & ADDRESS):'
 @ 17,11 get mref pict '@!'
 @ 19,8 say 'TYPE OF USE ("1" - PRIVATE, "2" - BUSINESS, "3" - GOVERNMENT):'
get muse
 @ 21,8 say 'LOCATION ADDRESS:' get mladdr pict '@!'
 read
 @ 23,29 say 'TO SAVE DATA (Y/N):'
 do whil .t.
  select2=' '
  @ 23,49 get select2 pict '!'
  read
  if select2 $ 'YN'
   exit
  endi
 endd
 if select2='Y'
```

```
      appe blan
      repl line with mline,sname with msname,fname with mfname
      repl oname with moname,occup with moccup,banks with mbanks
      repl caddr with mcaddr,laddr with mladdr,ref with mref,use with muse
   endi
endd
clos all
clea
retu


VRD.PRG

use customer
do whil .t.
  clea
  mline=spac(13)
  @ 2,5 to 24,74 doub
  @ 2,31 say 'NITEL PLC, KADUNA'
  @ 1,30 to 3,48 doub
  @ 4,26 say 'VIEWING REGISTRATION DETAIL'
  @ 5,26 to 5,52 doub
  @ 22,6 to 22,73 doub
  @ 7,8 say 'LINE NUMBER (or (999)-9999999 to exit):'
  @ 7,48 get mline pict '(999)-9999999'
  read
  if mline='(999)-9999999'
    exit
  endi
  loca for line=mline
  if .not. foun()
    @ 23,22 say 'ILLEGAL LINE NUMBER - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    loop
  endi
  msname=sname
  mfname=fname
  moname=oname
  moccup=occup
  mbanks=banks
  mcaddr=caddr
  mladdr=laddr
  mref=ref
  muse=use
  @ 9,12 say 'SURNAME'
  @ 9,36 say 'FIRST NAME'
  @ 9,57 say 'OTHER NAMES'
  @ 10,8 get msname pict '@!'
  @ 10,31 get mfname pict '@!'
  @ 10,54 get moname pict '@!'
  @ 12,8 say 'CONTACT ADDRESS:' get mcaddr pict '@!'
```

```
  @ 14,8 say 'OCCUPATION:' get moccup pict '@!'
  @ 14,44 say 'BANKERS:' get mbanks pict '@!'
  @ 16,8 say 'REFREE (NAME & ADDRESS):'
  @ 17,11 get mref pict '@!'
  @ 19,8 say 'TYPE OF USE ("1" - PRIVATE, "2" - BUSINESS, "3" - GOVERNMENT):'
get muse
  @ 21,8 say 'LOCATION ADDRESS:' get mladdr pict '@!'
  clea gets
  @ 23,20 say 'VIEWING CUSTOMER DETAIL - PRESS ANY KEY'
  set cons off
  wait
  set cons on
endd
clos all
clea
retu
```

CRD.PRG

```
use customer
do whil .t.
  clea
  mline=spac(13)
  @ 2,5 to 24,74 doub
  @ 2,31 say 'NITEL PLC, KADUNA'
  @ 1,30 to 3,48 doub
  @ 4,26 say 'EDITING REGISTRATION DETAIL'
  @ 5,26 to 5,52 doub
  @ 22,6 to 22,73 doub
  @ 7,8 say 'LINE NUMBER (or (999)-9999999 to exit):'
  @ 7,48 get mline pict '(999)-9999999'
  read
  if mline='(999)-9999999'
    exit
  endi
  loca for line=mline
  if .not. foun()
    @ 23,22 say 'ILLEGAL LINE NUMBER - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    loop
  endi
  msname=sname
  mfname=fname
  moname=oname
  moccup=occup
  mbanks=banks
  mcaddr=caddr
  mladdr=laddr
  mref=ref
  muse=use
```

```
@ 9,12 say 'SURNAME'
@ 9,36 say 'FIRST NAME'
@ 9,57 say 'OTHER NAMES'
@ 10,8 get msname pict '@!'
@ 10,31 get mfname pict '@!'
@ 10,54 get moname pict '@!'
@ 12,8 say 'CONTACT ADDRESS:' get mcaddr pict '@!'
@ 14,8 say 'OCCUPATION:' get moccup pict '@!'
@ 14,44 say 'BANKERS:' get mbanks pict '@!'
@ 16,8 say 'REFREE (NAME & ADDRESS):'
@ 17,11 get mref pict '@!'
@ 19,8 say 'TYPE OF USE ("1" - PRIVATE, "2" - BUSINESS, "3" - GOVERNMENT):'
get muse
@ 21,8 say 'LOCATION ADDRESS:' get mladdr pict '@!'
read
@ 23,28 say 'TO SAVE CHANGES (Y/N):'
do whil .t.
  select2=' '
  @ 23,51 get select2 pict '!'
  read
  if select2 $ 'YN'
    exit
  endi
endd
if select2='Y'
  repl sname with msname,fname with mfname
  repl oname with moname,occup with moccup,banks with mbanks
  repl caddr with mcaddr,laddr with mladdr,ref with mref,use with muse
endi
endd
clos all
clea
retu
```

DRD.PRG

```
use customer
do whil .t.
  clea
  mline=spac(13)
  @ 2,5 to 24,74 doub
  @ 2,31 say 'NITEL PLC, KADUNA'
  @ 1,30 to 3,48 doub
  @ 4,26 say 'DELETING REGISTRATION DETAIL'
  @ 5,26 to 5,53 doub
  @ 22,6 to 22,73 doub
  @ 7,8 say 'LINE NUMBER (or (999)-9999999 to exit):'
  @ 7,48 get mline pict '(999)-9999999'
  read
  if mline='(999)-9999999'
    exit
  endi
```

```
loca for line=mline
if .not. foun()
  @ 23,22 say 'ILLEGAL LINE NUMBER - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
endi
msname=sname
mfname=fname
moname=oname
moccup=occup
mbanks=banks
mcaddr=caddr
mladdr=laddr
mref=ref
muse=use
@ 9,12 say 'SURNAME'
@ 9,36 say 'FIRST NAME'
@ 9,57 say 'OTHER NAMES'
@ 10,8 get msname pict '@!'
@ 10,31 get mfname pict '@!'
@ 10,54 get moname pict '@!'
@ 12,8 say 'CONTACT ADDRESS:' get mcaddr pict '@!'
@ 14,8 say 'OCCUPATION:' get moccup pict '@!'
@ 14,44 say 'BANKERS:' get mbanks pict '@!'
@ 16,8 say 'REFREE (NAME & ADDRESS):'
@ 17,11 get mref pict '@!'
@ 19,8 say 'TYPE OF USE ("1" - PRIVATE, "2" - BUSINESS, "3" - GOVERNMENT):'
get muse
@ 21,8 say 'LOCATION ADDRESS:' get mladdr pict '@!'
clea gets
@ 23,25 say 'TO DELETE THIS RECORD (Y/N):'
do whil .t.
  select2=' '
  @ 23,54 get select2 pict '!'
  read
  if select2 $ 'YN'
    exit
  endi
endd
if select2='Y'
  dele
  pack
  @ 23,20 say 'RECORD HAS BEEN DELETED - PRESS ANY KEY'
else
  @ 23,18 say 'RECORD HAS NOT BEEN DELETED - PRESS ANY KEY'
endi
set cons off
wait
set cons on
endd
```

```
clos all
clea
retu
```

LRD.PRG

```
clea
sele 1
 use customer
sele 2
 use category
@ 0,27 to 2,52 doub
@ 1,28 say 'LIST REGISTRATION DETAIL'
@ 3,7 to 24,72 doub
@ 4,11 say 'LINE NUMBER'
@ 4,30 say "CUSTOMER'S NAME"
@ 4,58 say 'TYPE OF USE'
@ 5,8 to 5,71 doub
@ 4,25 to 21,25 doub
@ 4,55 to 21,55 doub
@ 22,8 to 22,71 doub
r=5
sele 1
do whil .not. eof()
 mline=line
 msname=rtri(sname)
 mfname=rtri(fname)
 moname=oname
 mname=msname+' '+left(mfname,1)+'.'
 if moname<>spac(20)
  mname=mname+left(rtri(moname),1)+'.'
 endi
 muse=use
 sele 2
 loca for code=muse
 cate=category
 mrate=rate
 sele 1
 r=r+1
 @ r,10 say mline
 @ r,28 say mname
 @ r,58 say cate
 skip
endd
@ 23,18 say 'LISTING REGISTRATION DETAIL - PRESS ANY KEY'
set cons off
wait
set cons on
clos all
clea
retu
```

NUC.PRG

```
sele 1
 use customer
sele 2
 use category
do whil .t.
 clea
 mline=spac(13)
 @ 2,5 to 23,74 doub
 @ 2,31 say 'NITEL PLC, KADUNA'
 @ 1,30 to 3,48 doub
 @ 4,31 say 'NEW UNIT CONSUMED'
 @ 5,31 to 5,47 doub
 @ 21,6 to 21,73 doub
 @ 7,7 say 'LINE NUMBER (or (999)-9999999 to exit):'
 @ 7,47 get mline pict '(999)-9999999'
 read
 if mline='(999)-9999999'
   exit
 endi
 sele 1
 loca for line=mline
 if .not. foun()
   @ 22,22 say 'ILLEGAL LINE NUMBER - PRESS ANY KEY'
   set cons off
   wait
   set cons on
   loop
 endi
 msname=sname
 mfname=fname
 moname=oname
 mladdr=laddr
 muse=use
 mbanks=banks
 mref=ref
 mbalance=balance
 sele 2
 loca for code=muse
 cate=category
 mrate=rate
 mconsume=0
 sele 1
 @ 9,11 say 'SURNAME'
 @ 9,35 say 'FIRST NAME'
 @ 9,56 say 'OTHER NAMES'
 @ 10,7 get msname pict '@!'
 @ 10,30 get mfname pict '@!'
 @ 10,53 get moname pict '@!'
 @ 12,7 say 'LOCATION ADDRESS:' get mladdr pict '@!'
 @ 14,7 say 'CATEGORY OF USERS:' get cate
```

```
@ 14,50 say 'CHARGES RATE: #'
@ 14,65 get mrate pict '9.99'
@ 15,6 to 15,73
@ 17,6 say 'DETAILS OF CONSUMPTION:'
clea gets
@ 18,8 say 'UNIT CONSUMED:' get mconsume pict '999,999'
@ 18,38 say 'CONSUMPTION CHARGES: #'
@ 20,8 say 'BALANCE: #'
@ 20,40 say 'TOTAL AMOUNT: #'
read
mcost=mrate*mconsume
mtotal=mbalance+mcost
@ 18,60 get mcost pict '9,999,999.99'
@ 20,18 get mbalance pict '999,999,999.99'
@ 20,56 get mtotal pict '999,999,999.99'
clea gets
@ 22,29 say 'TO SAVE DATA (Y/N):'
do whil .t.
  select2=' '
  @ 22,49 get select2 pict '!'
  read
  if select2 $ 'YN'
    exit
  endi
endd
if select2='Y'
  repl consume with mconsume,balance with mtotal,cost with mcost
endi
endd
clos all
clea
retu


LUC.PRG

clea
@ 0,30 to 2,49 doub
@ 1,31 say 'LIST UNIT CONSUMED'
@ 3,6 to 24,73 doub
@ 4,10 say 'LINE NUMBER'
@ 4,30 say "CUSTOMER'S NAME"
@ 4,58 say 'UNIT CONSUMED'
@ 5,8 to 5,71 doub
@ 4,24 to 21,24 doub
@ 4,55 to 21,55 doub
@ 22,8 to 22,71 doub
r=5
use customer
do whil .not. eof()
  mline=line
  msname=rtri(sname)
  mfname=rtri(fname)
```

```
  moname=oname
  mname=msname+' '+left(mfname,1)+'.'
  if moname<>spac(20)
   mname=mname+left(rtri(moname),1)+'.'
  endi
  mconsume=consume
  r=r+1
  @ r,9 say mline
  @ r,28 say mname
  @ r,58 say mconsume
  skip
endd
@ 23,19 say 'LISTING UNITS CONSUMPTION - PRESS ANY KEY'
set cons off
wait
set cons on
clos all
clea
retu
```

CUC.PRG

```
sele 1
 use customer
sele 2
 use category
do whil .t.
 clea
 mline=spac(13)
 @ 2,5 to 23,74 doub
 @ 2,31 say 'NITEL PLC, KADUNA'
 @ 1,30 to 3,48 doub
 @ 4,30 say 'CHANGE UNIT CONSUMED'
 @ 5,30 to 5,49 doub
 @ 21,6 to 21,73 doub
 @ 7,7 say 'LINE NUMBER (or (999)-9999999 to exit):'
 @ 7,47 get mline pict '(999)-9999999'
 read
 if mline='(999)-9999999'
  exit
 endi
 sele 1
 loca for line=mline
 if .not. foun()
  @ 22,22 say 'ILLEGAL LINE NUMBER - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
 endi
 msname=sname
 mfname=fname
```

```
moname=oname
mladdr=laddr
muse=use
mbanks=banks
mref=ref
mbalance=balance
mconsume=consume
mconsume2=consume
sele 2
loca for code=muse
cate=category
mrate=rate
sele 1
@ 9,11 say 'SURNAME'
@ 9,35 say 'FIRST NAME'
@ 9,56 say 'OTHER NAMES'
@ 10,7 get msname pict '@!'
@ 10,30 get mfname pict '@!'
@ 10,53 get moname pict '@!'
@ 12,7 say 'LOCATION ADDRESS:' get mladdr pict '@!'
@ 14,7 say 'CATEGORY OF USERS:' get cate
@ 14,50 say 'CHARGES RATE: #'
@ 14,65 get mrate pict '9.99'
@ 15,6 to 15,73
@ 17,6 say 'DETAILS OF CONSUMPTION:'
clea gets
@ 18,8 say 'UNIT CONSUMED:' get mconsume pict '999,999'
@ 18,38 say 'CONSUMPTION CHARGES: #'
@ 20,8 say 'BALANCE: #'
@ 20,40 say 'TOTAL AMOUNT: #'
read
mcost2=mrate*mconsume2
mcost=mrate*mconsume
mtotal=mbalance+mcost
@ 18,60 get mcost pict '9,999,999.99'
@ 20,18 get mbalance pict '999,999,999.99'
@ 20,56 get mtotal pict '999,999,999.99'
clea gets
@ 22,29 say 'TO SAVE DATA (Y/N):'
do whil .t.
  select2=' '
  @ 22,49 get select2 pict '!'
  read
  if select2 $ 'YN'
    exit
  endi
endd
if select2='Y'
  repl consume with mconsume,balance with mtotal,cost with mcost
endi
endd
clos all
```

```
clea
retu
```

VUR.PRG

```
clea
@ 3,18 to 22,61 doub
@ 3,32 say 'NITEL PLC KADUNA'
@ 2,31 to 4,48 doub
@ 6,31 say 'VIEWING UNIT RATE'
@ 7,31 to 7,47
@ 9,19 to 9,60
@ 10,26 say 'CODE'
@ 10,35 say 'CATEGORY'
@ 10,50 say 'RATE'
@ 11,19 to 11,60
@ 18,19 to 18,60
r=12
use category
do whil .not. eof()
  mcode=code
  mcategory=category
  mrate=rate
  @ r,27 say mcode
  @ r,35 say mcategory
  @ r,50 say mrate pict '9.99'
  skip
  r=r+2
endd
@ 20,27 say 'PRESS ANY KEY TO CONTINUE'
set cons off
wait
set cons on
use
clea
retu
```

EUR.PRG

```
clea
@ 3,18 to 22,61 doub
@ 3,32 say 'NITEL PLC KADUNA'
@ 2,31 to 4,48 doub
@ 6,31 say 'EDITING UNIT RATE'
@ 7,31 to 7,47
@ 9,19 to 9,60
@ 10,26 say 'CODE'
@ 10,35 say 'CATEGORY'
@ 10,50 say 'RATE'
@ 11,19 to 11,60
@ 18,19 to 18,60
r=12
```

```
j=1
decl mrate[3]
use category
do whil .not. eof()
  mcode=code
  mcategory=category
  mrate[j]=rate
  @ r,27 say mcode
  @ r,35 say mcategory
  @ r,50 get mrate[j] pict '9.99'
  skip
  j=j+1
  r=r+2
endd
clea gets
j=1
r=12
do whil j<=3
  @ r,50 get mrate[j] pict '9.99'
  read
  j=j+1
  r=r+2
endd
@ 20,28 say 'TO SAVE CHANGES (Y/N):'
do whil .t.
  select2=' '
  @ 20,51 get select2 pict '!'
  read
  if select2 $ 'YN'
    exit
  endi
endd
if select2='Y'
  go top
  j=1
  do whil .not. eof()
    repl rate with mrate[j]
    skip
    j=j+1
  endd
endi
use
clea
retu
```

ICR.PRG

```
clea
check=' '
@ 13, say 'To Continue (Y/N):' get check pict '!'
read
if check='N'
```

```
    clea
    retu
  endi
  clea
  r=0
  use customer
  do whil .not. eof()
    mline=line
    msname=rtri(sname)
    mfname=rtri(fname)
    moname=oname
    mname=msname+' '+left(mfname,1)+'.'
    if moname<>spac(20)
      mname=mname+left(rtri(moname),1)+'.'
    endi
    mconsume=consume
    mladdr=laddr
    mbalance=balance
    mcost=cost
    r=r+1
    @ r,26 say 'NITEL PLC - KADUNA'
    r=r+1
    @ r,26 say repl('-',18)
    r=r+2
    @ r,23 say 'CUSTOMER BILLING SYSTEM'
    r=r+1
    @ r,23 say repl('-',23)
    r=r+3
    @ r, say 'PHONE No: '+mline
    @ r, say 'NAME: '+mname
    r=r+2
    @ r, say 'ADDRESS: '+mladdr
    r=r+2
    @ r,9 say mline
    @ r,28 say mname
    @ r,58 say mconsume
    skip
  endd
  clea
  @ 0,30 to 2,49 doub
  @ 1,31 say 'LIST UNIT CONSUMED'
  @ 3,6 to 24,73 doub
  @ 4,10 say 'LINE NUMBER'
  @ 4,30 say "CUSTOMER'S NAME"
  @ 4,58 say 'UNIT CONSUMED'
  @ 5,8 to 5,71 doub
  @ 4,24 to 21,24 doub
  @ 4,55 to 21,55 doub
  @ 22,8 to 22,71 doub
  r=5
  use customer
  do whil .not. eof()
```

```
@ 23,19 say 'LISTING UNITS CONSUMPTION - PRESS ANY KEY'
set cons off
wait
set cons on
clos all
clea
retu
```