COMPUTERISATION OF LABOUR MARKET STATISTICS: A CASE STUDY OF NATIONAL MANPOWER BOARD, ABUJA.

BY

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(PGD/MCS/98/99/745)

A PROJECT SUBMITTED TO THE DEPARTMENT OF MATHEMATICS/ COMPUTER SCIENCE FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF A POSTGRADUATE DIPLOMA IN COMPUTER SCIENCE.

SEPTEMBER, 2001.

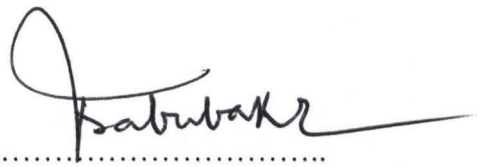
DEDICATION

To Hajarat, Aishat, Nurudeen and Hasiyat (my children) and to my

Dearest wife, for their understanding and support.

DECLARATION

I hereby declare that this project is my own work and has not been presented in any form for another qualification at any other university or institution.



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SEPTEMBER, 2001.

CERTIFICATION

I certify that this project work was carried out by ABUBAKAR, ISAH ADAMU in the Department of Mathematics and Computer Science, Federal University of Technology,Minna.

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HEAD OF DEPARTMENT	SUPERVISOR
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EXTERNAL EXAMINER

AKNOWLEDGEMENT

In the name of God, Most Gracious, Most Merciful. All praise is to God Almighty who gave me the good health, will power and resources to undertake this course of study, and guided me to its successful completion. To God is the Glory.

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ABUBAKAR, I.A.
SEPT. 2001.

ABSTRACT

The dynamics of Information Technology in the new millennium makes it necessary for data to be continuously processed (collected, stored, retrieved, deleted, etc) by the National Manpower Board so as to be able to give current information on the Nigerian Labour Market situation. This project was conceived and undertaken with a view to using the Computer to evolve a sophisticated database system for this purpose.

The National Manpower Board presently collects its data manually. It is therefore the belief of this researcher that the efforts made in this project will serve the useful purpose of solving whatever problem(s) the Board encounters with its existing system.

The research work has shown that the introduction and implementation of the new system in the organization will facilitate accurate data processing, storage, and timely and fast retrieval of information; effective and efficient report generation for management decision-making.

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CHAPTER ONE

1.0.INTRODUTION

1.1 PROBLEM DIFFINITION:

In many Nigerian public agencies, data are still mostly recorded on paper in form of both published and unpublished, as well as printed, typed or handwritten documents. These documents are usually stored in paper files or printed and published book forms. Overtime, such files or books become bulky and may be split into volumes. In such a setting policy makers, planners and researchers in public agencies often must browse through bulky, multi-volume files or books to obtain, integrate and use data for decision making or future research.

Such information or data when needed for assessment by the policy makers or researchers might and more often, do get misplaced in transit or they may be simply incomplete. Consequently, the process of manually searching for or storage of specific facts, or of collecting and summarizing information germane to a specific policy, problem or task is usually difficult and time consuming. Policy makers are more often then not, forced to use out dated facts or erroneous rule-of-thumb.

This type of process and many others like it were adequate for smaller organizations. However, with technological advancement and development over the years, alternative methods have been developed which have given rise to more sucessessful and better policymaking, researches and data storage.

Information Technology (IT) comprises all the tools and resources for capturing, storing and processing data, and for providing information consumers with information from the data. When viewed in broad terms, Information Technology includes the organizational structures within which specific equipment; software and

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procedures are used, as well as the complementary human, administrative and technical expertise. Accordingly, for any organization, Information Technology should be considered in terms of integrating the human resources, organizational structure and environment, Computers and Computer software, as mutually interdependent components into an Information system of the organization.

There can be no doubt that Computers are important components of Information Technology. Computers have assumed a new and phenomenal role in virtually all aspects of human activity. Probably, no other technological device has had such a pervasive effect on human life. In view of the phenomenal changes brought about by the invention of the Computer and its method of application, systems such as database systems are created and maintained by the use of Database Management Systems (DBMS) packages for the purpose of accessing different kinds of information required quickly by more successful and bigger organizations.

Data are the raw materials of Management Information System (MIS) for producing Information. Data comprise of symbols recorded as words, numbers or graphs in memos, reports, datasheets or tables, Computer files and database. Databases are therefore created by Management Information System for the systematic storage, retrieval, protection and management of structured data records pertaining to various entities.

Database refers to a collection of computerized and linked data files for storing and maintaining the data of an organization. The data could be numerical (e.g. GDP or Manpower time series), textual (memoranda or technical reports) and pictorial (maps, photographs, graphs). The databases are created with a special type of software known as database management system

The advantage of storing data using database cannot be over-emphasized. Increasingly therefore, in many organizations, data are now being stored in data files on Computer media. The advantage of computerized data files over paper files lies in the ease with which specific data in computerized files can be retrieved for purposes of comparison, merging, display or graphing which are key processes in planning any activity. In other words, modern Information Technologies are a pre-requisite to cost-effective information processing in modern organization

Policy makers, Researchers and administrators often need and prefer certain types of data and information for making and acting on decisions. They may be forced to do without the right information unless planners and the organization's data management system can provide the information in the right format and timely.

Policy makers and Researchers often require ready access to tit bits of current facts, to summarized information about past and present conditions or about predicted future conditions and to policy recommendations from experts. Most importantly, they need ready access to communication facilities for quickly transferring, disseminating, reporting and exchanging data and information to each other's within and outside each agency.

The key concept is "ready access" to summarized information for economic policy makers and managers, which in turn, translates to the need for "ready access" to raw data and data processing tools for economic planners and researchers.

An effective database and database management system for economic policy making and planning would provide the capabilities for creating the required access for economic policy-makers, managers, planners and researchers.

1.2.OBJECTIVE AND SIGNIFICANCE OF THE STUDY.

In this new millennium, and as the world gradually turns into a global village through Information Technology, the Computer has been engaged in virtually all spheres of human endeavour. This research is conducted with the main objective of introducing an automated computer system into an existing manual system of processing and analysis of research data for policy planning. This study intends to go beyond only introducing an automated system, and to introduce a system of storage through the creation of a databank, using the computer device of data files and database management system

Database refers to a collection (file) of structured data in the form of records, which are accessible to authorized Managers and other administrative purposes and for use in making decisions and controlling business operations. The databases are created by a special kind of software known as Database Management System (DBMS). This is a set of programs, which deals Database management activities including updating, deleting, adding and amending records. It also allows for validation, sorting, searching and printing of records from database as well as providing facilities for performing calculations and for maintaining a directory

The significance of the study lies in the fact that when the new system has been designed and implemented, it is expected to reduce misplacement of information and data redundancy. As the concept of database is associated with computerization of how data are recorded, processed and stored, it will also replace the current multi-volume paper files and manual report writing/Book publishing system of data storage with data files. It will help in maintaining data security by introducing code names and passwords and numbers relating to certain files. The system will be designed to be user-friendly and set to recognize its users, thereby limiting its misuse

Since every organization requires standard procedures and methodology so that it may operate effectively, it is the hope of this researcher that these aims and objectives can be achieved using the computer device and Database Management System (DBMS)

1.3. SCOPE AND LIMITATION

This research project is on a "computerized database system of Laour Market Statistics" for the study of the Nigerian Labour Market by the National Manpower Board, Abuja. It is conducted from the system analysis and design perspective. As a result of this therefore, the main focus will be on analyzing the existing system, defining the problems inherent in the organization's research report /data entry and processing, and report publishing system of data storage, and designing a suitable automated system with particular reference to creating a database structure for information storage and retrieval.

The study will outline a brief historical background of National Manpower Board, its functions, operational activities and structure. It will also make an analysis of Labour and Employment Market study and statistics in Nigeria, with particular reference to the National Manpower Board (NMB) and its operational activities. In focus will also be the study of the Nigerian labour market conducted by the Board.

A feasibility study will be carried out in which the current research data entry and processing system will be appraised, and its merits and demerits outlined. A computerized databank system will be proposed with system specifications as well as the resources available and are required to be used. Designing of a new system and implementation, writing of programs and testing them, system conversion, training, evaluation, installation and maintenance will also be considered as well as cost benefit

analysis and estimation of implementing the new system will be done. Finally, observations, recommendations and conclusions will be made

The constraints of a research proposal of this nature abound. As a proposal, which aims to introduce something new into an existing system, one basic constraint is that it has to be first of all acceptable to the operators of the current system. Whatever changes to be introduced will also have to be gradual from the existing multi-volume report publishing system to the computerized databank system. In such a situation therefore, users or operators will have to be adequately educated on the benefits and implementation of the new system, and to succeed, this process will have to be gradual. Also, management will have to be convinced to accept the new idea so as to facilitate the release of funds to implement the new proposal.

1.4. RESEARCH METHODOLOGY.

The aim of this research is to attempt evolving a computerized databank system of Labour Market Statistics, to replace the current manual system of research data processing and report publishing data storage system at National Manpower Boar

In order to achieve this, efforts were made to put forward a proposal. To collect enough data, the system analysis and design approach was used for the feasibility studies. This proved a useful method of finding out all necessary information for the systemic analysis and subsequent design of the automated system. The feasibility study was conducted through fact-finding techniques such as interview and observation of the operators of the current existing system, that is, the Staff of the Board. Also, document review was made to find out the present activities of the Board, how it operates and most importantly, how the current system is handled and how it has contributed to the success or failure of the Board.

Using all the available information gathered through the methods adopted, an attempt is made to create a database management system, which will handle and manage a databank where data are stored on data files. A suggestion is also made to replace the current system with the automated databank system.

CHAPTER TWO

2.1. LABOUR AND EMPLOYMENT MARKET STATISTICS IN NIGERIA.

Labour Market statistics are statistical data relating to the employment status of the population, its living conditions and its condition of work. Such labour market statistics deal with sensitive and important issues and are defined here more comprehensively to comprise statistics/data on the economically active population or labour force, employment, unemployment, underemployment (in both the formal and informal sectors), wages and salaries, hours of work and labour cost, household income and expenditure, consumer price indices, occupational injuries, strikes, lockouts and other action due to labour disputes, social security, vacancies, training, collective agreements, occupations, employment status and the informal sector.

The importance of labour market statistics is growing fastly. They have therefore, of recent been a subject of accusation, controversies and even jokes. The use of averages, percentages and other statistical computations is now a basic means of analysis for those who govern us or who make the wheels of national economies turn. Labour market statistics have become an essential factor in modern decision-making. This is precisely why so many people are tempted to present them in the best light possible, but some others to make them less clear or even to manipulate them.

Labour market statistics are such controversial area of information to governments, employers, workers and others because they deal with people's daily lives and activities. For instance, at present unemployment rates are seen as much as indicators of social health as they are indicators of economic or labour market performance. Also, such figures influence voters, stock markets and movements of capital and investments. One of the main purposes of employment statistics, for example, is to indicate to the

public the number of workers who are employed in contributing to the production of goods and services during a specified period. In addition, study of the relationship between employment, income and other social and economic factors is most important for planning and monitoring employment, for vocational training, for development of new trades and occupations and many related activities.

Reliable statistics are essential for the effective design and targeting of policy intervention on all issues relating to the labour market and manpower generally. They also provide a firm basis for social dialogue and collective bargaining (ILO, 1996). Data on earnings and labour costs, for instance, are valuable economic indicators, and when adjusted by an appropriate price index, they can show in general terms how workers throughout the economy are faring on average. They are also very useful for planners, policy makers, employers and workers. Such statistics are essential in evaluating living standards and conditions of work and life. They are also used for planning of economic and social development; establishing income and fiscal policies, wage structure, manpower planning, labour utilization, minimum wage regulations, social security, collective bargaining, research and analysis, price policies, etc.

2.1.1. SOME BASIC CONCEPTS OF LABOUR MARKET STATISTICS.

(a) **The Labour Force**:

The Labour force of any nation can be classified as "potential" and "active". The potential labour force refers to the entire population less (a) young people below a prescribed age (usually 15 years), (b) old people above a certain age (usually 65years in most nations), (c) people who are institutionalized- those who are hospitalized or incarcerated, or physically disabled, (f) full-time house wives, and (e) those unwilling to work. Children –those below 15years are excluded on the assumption that schooling

and child labour laws keep most of them out of the labour force. Similarly, persons over the age of 65 generally retire and as such are not part of the working population. Those who are excluded can be regarded as economically inactive population. The active labour force on the other hand, consists of those people who are either employed or unemployed but actively seeking for job –the age-eligible population, (that is, Active Labour Force) equals employment plus unemployment.

This economically active population includes those who are participating in economic activities, plus others able and willing to do so, but cannot, due to hindrances beyond their control. In other words, it includes those who are physically or actually participating in economic activities, plus those who could have been participating but are hindered by some reasons beyond their control or because of their inability to secure jobs.

(b). Unemployment:

The unemployed consists of all persons who, during the reference period, were not working but who were seeking work for pay or profit, including those who never worked before. Also included are persons who during the reference period were not seeking work because of temporary illness, because they made arrangement to start a new job subsequent to the reference period or because they were on temporary or indefinite layoff without pay. Where employment opportunities are very limited, the unemployed should also include persons who were not working and were available for work, but were not actively seeking it because they believed that no jobs were open.

Persons who were neither employed or unemployed are classified as not in the labour force. The labour force size is determined by population size, rate of population growth, population age – sex structure, replacement ratios and rates, dependency ratio and school enrolment ratio. The unemployment rate could be computed relative to the

"civilian labour force", the "total labour force", the "wage and salary labour force" or some other figure. The total labour force equals the civilian labour force plus the military.

(c) Employment:

This pertains to persons who, during a specified period of time, work for pay or profit or are self employed; or unpaid workers in family business who worked at least one third of normal working time; or have a job, but are not at work because of illness, industrial dispute, holiday, etc. It is therefore, a situation in which remuneration in cash or in kind is received in exchange for active, direct personal participation in the production process.

Employed persons, that is, those who are at work or those who have jobs or enterprises during the reference period, can be classified in the categories of (a) employer (a person who operates his/her own economic enterprises or engaged independently in a profession or trade, and hires one or more employees); (b) own – account worker (a person who operates an economic enterprises of his/her own or engages independently in a profession, and hire no employee); (c) employee (a person who works for a public or private employer and receives remuneration in wages, salary, etc); (d) unpaid family worker (a person who works a specified minimum amount of time, at least one-third of normal working hours, in an economic enterprises operated by a related person living in the same household); (e) members of producer co-operatives, regardless of the industry in which it is established; and (f) persons not classified by status, that is experienced workers with status unknown or inadequately described and unemployed persons not previously employed.

Depending on the length of time over which the work is carried out or is available, employment can be classified into full-time, part-time, temporary, fixed-time, interim, casual or seasonal.

(d). Underemployment:

This exists when a person's employment is inadequate in relation to specified norms or alternative employments, account being taken of the person's occupational skills (training and experience). Underemployment could be visible (when a person involuntarily work part-time or for shorter periods than usual) or invisible (when people's working time is not abnormally reduced but their employment is inadequate in other aspects like low earnings, jobs do not permit exercise of fullest skills or capacities, and when the establishment's productivity is very low).

2.2. NATIONAL MANPOWER BOARD AND ITS OPERATIONAL ACTIVITIES.

2.2.1. HISTORIAL BACKGROUND:

The National Manpower Board (NMB) is a Federal Government Parastatal mandated to research into, advise on, co-ordinate and promote optimal development (training) and utilization (employment) of Nigeria's human resources (manpower).

The history of the Board dates back to 1962 when, in accordance with the recommendation of the Ashby Commission Report of 1960, it was established. It operated under the National Economic Council, and later functioned under the Ministry of National Planning. In 1983, its Secretarial was made a Division under the Ministry of Budget and Planning (Now National Planning Commission).

The Board was reorganized and became an autonomous parastatal under Decree No. 18 of 1991 but its inception had to await the inauguration of its Governing Council

on October 16, 1992. Under this new dispensation, additional and wider mandates (functions) have been assigned to the Board. Equally, a new character and a new direction in the operational thrust of the Board have inevitably emerged.

The enabling law that established the Board empowers it to direct its broad functions to cover all the economic sectors in the Country at the Federal, State and Local Government Levels in matters pertaining to manpower Planning, development and utilization as carried out by Manpower agencies in public and private sectors, and by relevant professional bodies.

2.2. (ii) FUNCTIONS OF NATIONAL MANPOWER BOARD.

The National Manpower Board operates in a heterogeneous environment where there are many other manpower agencies seemingly performing similar complementary functions. This perception has occasioned both confusion and misgiving on the part of many as to what constitute the unique mandates of the Board. The functions or assigned mandates of the Board as contained in sections 5,6,7 and 8 of the enabling Decree are summarized as follows: -

i) To determine and advise the Government on the nation's Manpower need in all occupations;

ii) To formulate manpower development and utilization policies and programmes in order to ensure optimum implementation of same for the enhancement of the nation's manpower resources;

iii) To co-ordinate manpower policies and programmes of Federal, State and Local Government;

iv) To collect, collate, analyze and publish manpower and employment information and data generated through surveys, studies and enquires including administrative means;

v) To be consulted and required to make inputs on policies and programmes relating to:

a) Formulation of polices and programmes on manpower development and utilization of government agencies.

b) Preparation of periodic master plans for the co-coordinated development of institutions of higher learning;

c) Formulation of training programmes by all government agencies, including Ministries, Corporations and Government owned companies;

d) Formulation of policies governing scholarships and student's Loans tenable within or outside Nigeria;

e) Formulation of employment policies and the designing of programmes for employment generation, productivity enhancement and skills development; and

f) Implementation of Manpower Policies and Programmes relating to expatriate employment, the training efforts of private firms and the participation of Nigerians in the management of business activities.

vi) To identify, in liaison with Professional bodies and institutions, the stock flow and distribution of professional manpower;

vii) To organize and conduct seminars workshops, conferences, symposia and other research and training activities; and

viii) To disseminate information on manpower issues.

2.2.(iii) OPERATIONAL ACTIVIES OF NATIONAL MANPOWER BOARD

The commitment of the Board to discharging its mandates is manifested in the performance of the following activities: -

i) Generation of scientific and empirical data on manpower issues through researches (and studies) with the ultimate aim of applying the results to relevant policy and programme formulations. These researches are action and policy oriented as well as exploratory in nature, and include: - Nigerian Labour Market Study, Diagnostic Economic Studies, Nigerian Labour Force Sample Survey, Educational Manpower Supply Study, etc;

ii) Organization of international, national, regional and in-house workshops, conferences, seminars and symposia;

iii) Periodic preparation of the Manpower chapter of the National Rolling Plan and the perspective plan;

iv) Rendering professional advise to government agencies in the formulation of relevant manpower policies and programmes;

v) Publications and dissemination of research findings;

vi) Designing and undertaking of capacity building programmes. This includes the provision of customized training to improve the analytical capabilities of staff in the area of employment planning and manpower/human resources studies;

vii) Hosting the secretariat of and providing leadership to the Nigerian National Network on Employment Promotion and Capacity Building;

viii) Monitoring and advising on expatriate employment trend in the country; and;

ix) Provision of Liaison services to other manpower agencies and professional bodies on training and other human resources development matters.

2.2. (iv) ORGANISATIONAL STRUCTURE OF NATIONAL MANPOWER

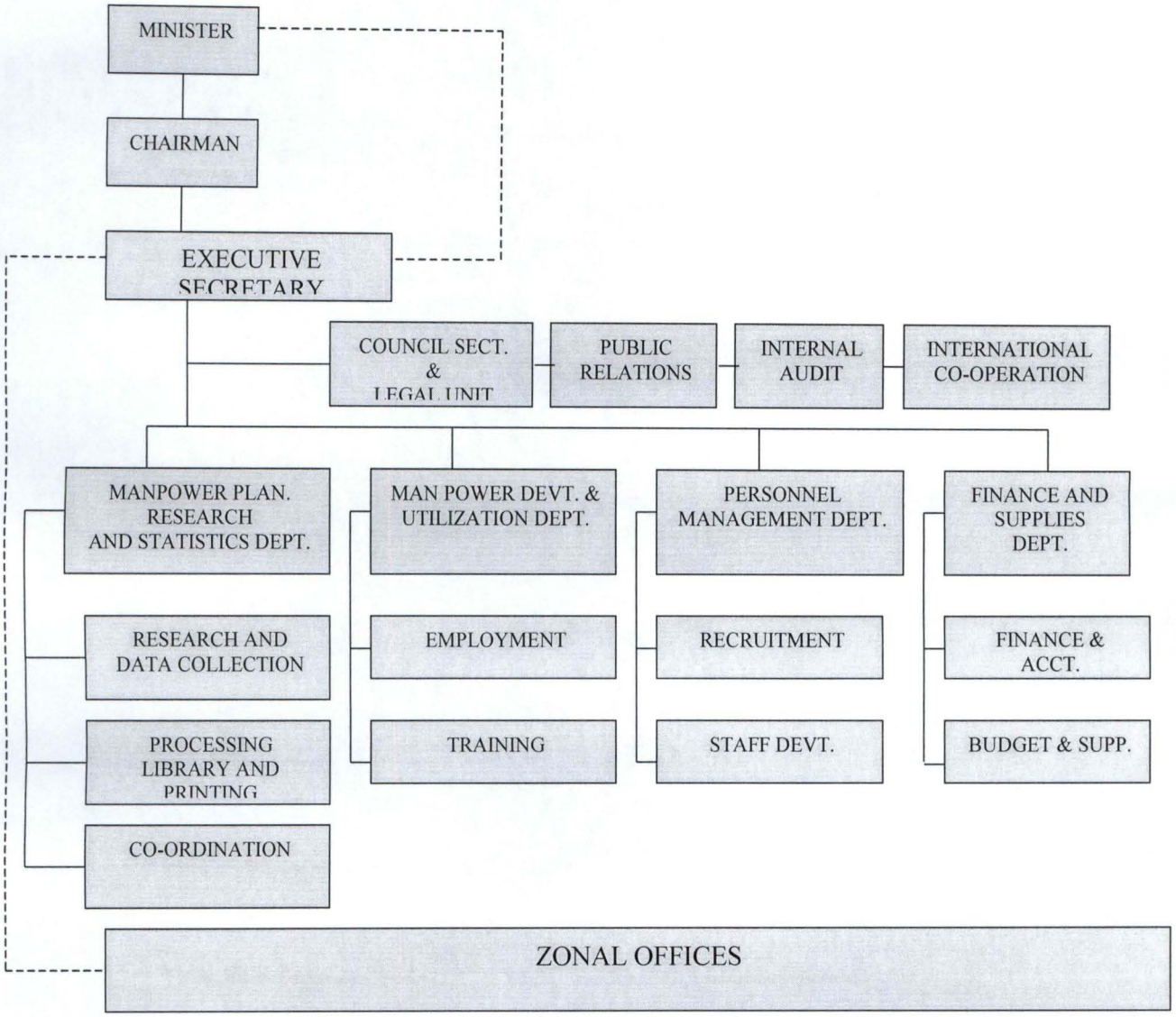
BOARD:-

The National Manpower Board is organized into a three tier vertical – horizontal structures:

a) The Governing Council: This is the apex of the organization and it has eleven members appointed by the President. A part-time Chairman heads the council.

b) The National Manpower Board Headquarters otherwise called 'the Secretariat' operates the programmes of the Board. It is responsible for the identification, design and execution of suitable programmes in accordance with the mandates of the Board. The Headquarters consists of four Departments – Manpower Planning, Research and Statistics (MPRS), Manpower Development and Utilization (MDU), Personnel Management and Finance and Supplies; and four units- Council Secretariat and Legal Unit, Public Relations, Internal Audit and International Co-operation Units.

c) The Zonal Offices: The Zonal Offices jointly constitute the third tier structure of the Board. The Zonal Offices are responsible for the field operations of NMB, linking the State and Local Governments with the Board. There are four Zonal Offices located at Akure, Bauchi, Minna and Owerri.



ORGANOGRAM OF NATIONAL MANPOWER BOARD

2.3. THE STUDY OF THE NIGERIAN LABOUR MARKET.

The question as to the estimated basic characteristics of Nigerian Labour Market has remained lingering and unanswered for the past two decades. This is because the last comprehensive study of the nation's labour force was done by the National Manpower Board in collaboration with the Federal Office of Statistics, (FOS) in 1976. However, since 1983, the Federal Office of Statistics on regular basis Published Preliminary Reports of the findings of its quarterly sample survey of Nigerian Labour Force. The FOS study designed for monitoring the employment situation of the country, and which was released in the 'Statistical News,' contains limited information on unemployment and under-employment characteristics. The type of detailed data required for thorough appraisal, evaluation and forecasting the Labour Market characteristics have not been covered in these FOS reports. The data emerging from the source also call for further investigation to verify whether they represent the true socio-economic situations of the nation. The need to produce data that would fill the observed information gaps of the socio-economic situation in the country's Labour Market became the imperative basis for the study of the Nigerian Labour Market.

Originally designed to cover the whole country and taking each state as a reporting domain, the study had to be phased with the first phase covering Lagos State, because of limited resources. The objectives of the study were to generate empirical data on the structure, trend of employment/unemployment, other Labour Force characteristics such as age, gender, and spatial distribution in the Nigerian Labour Market. The study is also aimed at generating data on current educational training

system in the country; Wages and Productivity profiles; and labour demand and supply profile and functions.

The long-term goals of the study include setting up computer based Labour Market information system (LMIS) for career counseling mechanisms as well as dissemination of labour market information to planners, Policy makers, employers of labour, job seekers, among others. This is the reason why, as one of the main activities of the National Manpower Board, the study of the Nigerian Labour Market is given a special consideration in this study. It will form the basis of this research on how to computerize the data generated by the study so as to achieve the long-term aim.

2.4. APPRAISAL OF CURRENT RESEARCH, DATA GENERATION AND PROCESSING AT NATIONAL MANPOWER BOARD.

One major activity undertaken by the National Manpower Board in the course of executing its mandates is to design, organize and conduct researches into manpower development and utilization problems. Among researches conducted by the Board are: Educational Manpower Supply Study (EMSS), the Study of the Nigerian Labour Market, Local Government Manpower Profile, Manpower Stock and requirements etc.

It would be seen that all the above-mentioned studies deal with various aspects of manpower problems. However, the study of the Nigerian Labour Market is the most encompassing of all. There in lies the reason why this researcher decided to focus his attention on what currently obtains at the Board as regards its study of Nigerian Labour Market. Thereafter, a proposal would be made on how to computerize the statistics of the data generated from the study by way of a databank.

The study of the Nigerian Labour Market is one of the important studies conducted by the Board. This household based study investigates labour characteristics including employment, open unemployment, under employment, labour mobility, family size, household leadership, income, education and training, gender participation in the labour force etc.

The fieldwork is conducted after the study has been designed and organized. Questionnaires are distributed to various households, which they are expected to complete. The questionnaires are later retrieved and data are collated and processed for analysis. Thereafter, the results are published/printed out as required by the Board and disseminated to the public as well as other relevant agencies for use.

The above is the outlook of what currently obtains at the Board as regards to conducting researches and processing of results. In the feasibility study it was observed that the Board operates a normal system of research data processing and analysis. Data from researches conducted are collected and collated manually, they are also processed and analyzed manually and printed as required in form of publications by the Board for official usage or purpose.

By interacting with and asking the staff of the Board and desk officers, it was revealed that the Board does to have an arrangement for a structured data storage system (databank) or a database where data can be stored on files for easy updating, retrieval, deletion, editing, etc.

2.5. MERITS AND DEMERITS OF THE CURRENT SYSTEM.

Every manual system has its merits and demerits, but in this age of computer

Technology and its advancement and positive effect on society, the demerits of any manual data processing, analysis and storage system outweigh the merits. There is therefore the need to computerize the process of data manipulation because of some obvious merits. The NMB should not be left out in this bid. These issues will therefore be discussed with particular reference to the Board, which is the case study.

The first thing worthy of note is the simplicity of the manual system of data processing and analysis over the complexity of a structured data storage system.

Another issue is the problem of cost. Overall, a manual system costs less in terms of stationary to be bought as well as other materials necessary for information input, processing and output. Another advantage of the manual system is the fact that the system does not require high caliber, experienced and specialized personnel.

Amongst the disadvantages include the possibility of duplication of data or information held within a file or files. This means that the same piece of information/data is likely to be repeated in the file it is contained or amongst files. Same information can also easily be missing or misplaced.

Access to information may be slow and inaccurate. Delays in retrieving data from voluminous files occur due to inability to locate said files that may not be properly filed or placed. Such problems also cause delays when that information is needed for fast and rapid response to immediate and urgent matters.

CHAPTER THREE

3.0. SYSTEM DESIGN AND DEVELOPMENT.

3.1. PROPOSED COMPUTERIZED DATABANK SYSTEM.

A database is a comprehensive, consistent, controlled and co-coordinated collection of structured data items. The computerized databank system is to simplify work and to improve workflow.

From the problems identified, the solution involves designing and implementing a computerized databank, a computer information system that will maintain the data in the organization and provide accurate information. The intention being to introduce a database management system (DBMS) capable of aiding the organization to:

a) Create and maintain a file in which each record will contain detailed information about a particular survey questionnaire;

b) Create and maintain a file in which each record will contain detailed information about members of a particular household and their relationships;

c) Create and maintain a file in which each record will contain detailed information about the Educational Qualification and activity status of individual household members;

d) Retrieve information from either or both files, that is, to display particulars for a specified record and print out for official purposes.

In order to maintain the files, the system must provide the capability to add or create new record s yet to be in the files, modify or edit the existing records in case of

changes in information; and delete or remove the information (data) no longer required or valid.

In case the type of study changes, the data on the database may still be valid for record purposes or future references. If facts change, then the database can be amended. The hardware and software can also be changed in order to reflect developments in the technology without requiring changes in the application system

3.2. THE COST AND BENEFIT ANALYSIS.

The capability of computers and the role they play in our society today in handling large volumes of data, capable of processing information in the fastest possible speed, accurately and according to specification and requirements, in a capacity of large volume of data; and provision of large space to store and retain such information until needed, the investment of an estimated cost of ₦700, 000.00 to N800, 000.00 could be justified in changing from the old manual system to the new computerized system as itemized below:-

a.) Equipment cost (cost of procurement of computers and other peripherals) = ₦200,000.00

b.) Installation cost, that is, new building (Computer Room, A/C, etc.) = = ₦50,000.

c.) Development cost (software consultancy/change-over cost) = = ₦100,000.00

d.) Personnel cost (Staff training/recruitment) = ₦100,000.00

e.) Operating cost: -

i.) Consumables (Tapes, Cards, Diskettes, stationary, etc.) = ₦50,000.00

ii.)	Maintenance	=	₦40,000.00
iii.)	Insurance/ power/ telephone	=	₦150,000.00
iv.)	Contingency	=	₦60,000.00
	TOTAL:	=	**₦700,000.00**

The cost of installing the new system out weights that of preserving and maintaining the old one. The financial implications include procuring equipment, installation cost, development, personnel and operating (tapes, cards, diskettes, maintenance, accommodation, insurance, etc) costs. The cost look scary. However, when viewed in the long run, when the benefits accruable in the installation and usage of the new system are considered, then it can be concluded that the change is worthwhile

Furthermore, the new system will permit information to be stored on such storage media as diskettes or computer hard disk. This means easier maintenance since there will be less paper work and misplacement of files or incorrect information will be avoided or curtailed. There is also the possibility of recovering lost information on a file from backup stored on another diskette called Father and Grand father diskettes, all kept in different places to avoid loss of all data.

3.3 SYSTEM SPECIFICATIONS

System specifications of design of a new system include inputs, outputs, files and procedures.

A system specification provides specific and detailed documentation of the system. It serves as an inter face between system analysis and design, and depends on the nature and complexity of the system. It also gives the details of a particular

implementation to make usage of the system easy and possible even when the designer might have left the organization. System specifications have to be accepted by the management.

3.3.1 INPUT SPECIFICATION

a) Name of System: Computerization of Labour Market Statistics at National Manpower Board

b) Serial number, Name of document or file and file description

Serial No.	*File Name*	*File description*
1	Quest. DBF	Survey Questionnaire data
2	Qtab1 DBF	Household members/relationship data
3	Qtab2 DBF	Members' educational/activity status data

c) Database Structure

1.Quest. DBF

The table below shows the file structure of the file named QUEST. DBF. The meanings of the fieldnames are also given.

S/N	FIELDNAME	MEANING	FIELDTYPE	WIDTH	DEC.	INDEX
1.	PG	Page	Numeric	4	-	N
1.	SM	Survey Month	Character	15	-	N

2.	S	Stratum	Character	10	-	N
3.	ST	State	Character	15	-	N
4.	LGA	L.G.A.	Character	15	-	N
5.	L	Locality	Character	15	-	N
6.	EA	E.A	Character	15	-	N
7.	BNO	Building No	Numeric	10	-	N
8.	HHNO	H.H.NO	Numeric	10	-	N
9.	SC	State Code	Numeric	6	-	N
10.	LGAC	L.G.A.Code	Numeric	6	-	N
11.	LC	Locality Code	Numeric	6	-	N
12.	EAC	E.A Code	Numreic	6	-	N
13.	BNOC	Building NO.Code	Numreic	6	-	N
14.	HHNOC	H.H.NO Code	Numeric	6	-	N
15.	Day	Day	Character	4	-	N
16.	M	Month	Character	15	-	N
17.	STA	Start time	Character	8	-	N
18.	SFIN	Finish time	Character	8	-	N
19.	EN	Enumerator Name	Character	30	-	N
20.	SN	Supervisor Name	Character	30	-	N

ii) Qtab1. DBF

The table below shows the file structure of the file named Qtab1. DBF used in the program. The meanings of the fieldnames are also given.

S/N	FIELDNAME	MEANING	FIELDTYPE	WIDTH	DEC	INDEX
1.	SN	Serial number	Numeric	4	-	N
2.	NAM	Full name	Character	25	-	N
3.	AG	Age	Numeric	4	-	N
4	SE	Sex	Numeric	3	-	N
5.	NAT	Nationality	Numeric	3	-	N
6.	MA	Marital Status	Numeric	3	-	N
7.	RE	Relationship	Numeric	3	-	N

iii) Qtab2. DBF

The table below shows the file structure of the file called Qtab2.DBF used in the program. The meanings of the fieldname used are also given.

S/N	FIELDNAME	MEANING	FIELDTYPE	WIDTH	DEC	INDEX
1.	SN	Serial number	Numeric	4	-	N
2.	CR	Can read or writes	Numeric	3	-	N
3.	HE	Highest Edu. Qualif.	Numeric	3	-	N
4.	SE	Special Edu. Training	Numeric	3	-	N
5.	AS	Activity status last week	Numeric	3	-	N

3.3.2. OUTPUT SPECIFICATIONS

a) Name of system:

Computerization of Labour Market Statistic at National Manpower Board.

b) Name of Report:

i) Survey Questionnaire files.

ii) Household members/Relationship files.

iii) Members Educational/Activity status file.

c) Field size:

i) Survey Questionnaire file = 21

ii) Household members/Relationship file – 7

iii) Members Educational/Activity Status file – 5

3.4. SYSTEM DESIGN.

The intention of this research work is design and creates a management information system, a computerized system that is an accurate and speedy system that can provide routine information. This is expected to aid the organization in its tasks of data collection, processing, storage and retrieval. That is, management of the organization's data or information system.

3.4.1.SYSTEM DESIGN LIFE CYCLE.

From the study conducted on the feasibility of the new system, it was deduced that looking at the technical feasibility of the project, due consideration had to be given to demands on the system regarding the terminal enquires; volume of data to be processed by on-line processing; the speed of response from system and the capability of hardware and software to meet these requirements.

The economic feasibility of the project in terms of its cost and benefit analysis in relation to the existing manual system was also considered. It was deduced that the long run advantages of the new system have to be considered viz a viz the initial cost of the change.

The proposal was forwarded to the management and it generated a lot of interest. It was considered a right step towards a standardized procedure and method of effectively and successfully conducting the organization's surveys, processing and storage, as well as retrieval of data.

The favourable disposition shown by management served as the required impetus for a proper analysis of the existing system through observation, document reviews and interviews with operators of the system. The facts that were gathered were verified and recorded, and issues concerning the capability of the system to achieve its purpose; control measure to ensure that the objectives were carried out according to specifications; the accessibility of information when needed and in a useful form; and the complexity that may arise with the system were dealt with. Due consideration was also given to the way the organization conducts its activities in designing the new system so as to ensure that it meets users requirements. The system is also made to ensure that improvements are developed, tested and implemented whereby

modifications are made to improve processing efficiency to agree with changing circumstances.

In designing the new system, the programme specifications were also outlined and this involved statement of program requirements including initializations, parameters, test data and testing procedure to be applied, checks and controls to be incorporated and exception routines.

The programming included structured designs, coding, testing procedures, validation checks and control measures, compilation of the programme and debugging. Steps where taken to convert files, conduct the system testing and the plans for the system implementation which included the conversion process of training personnel for the system; conversion of the system from the old to the new using the phase-in approach; and the installation of the system where issues like location, equipments, the computer room, provision of uninterruptible power supply (UPS), Stabilizers, Air conditioners etc, are considered.

This is then followed by a post implementation evaluation and maintenance. This has to do with monitoring the system performance with reference to even logging impact valuation and altitude survey.

3.5. DESIGNING THE SYSTEM.

The development of a solution to meet the requirements specified in the system proposal is a major task that goes beyond the capabilities of a single programme. The solution to those requirements entails the development of several programmes, all-relating to one another to form the overall system.

To develop such system however, the methodology needs to be outlined. The methodology will ensure that those programmes fit together properly and reasonably to form the Database Management System (DBMS). The methodology used is that of structured design.

This is a methodology that identifies what are the tasks a system is to accomplish and then relates those tasks to each other in hierarchical manner. Its primary form of representation is the hierarchical chart, which can be said to resemble an organizational chart. Each block in the hierarchical chart represents a programme in a system, just like an organization where the blocks correspond to the different positions. The levels within the hierarchical chart represent or indicate within the information system, the relationship between the programmes, just like levels in an organization represent relationship between managers and subordinates.

The hierarchical chart is given below for easy understanding, and the heading is DISPLAY MAIN-MENU, which is the program that drives the entire system. It shows an opening menu that offers a choice of maintaining survey questionnaire, household members relationship and members' educational/activity status records as well as displaying information. It also accepts a user response then enters the appropriate lower level program.

The lower level programmes directly under the main menu directs the maintenance of survey questionnaire, household members relationship, educational/activity records, display either of the records or a specified record. These programme are in turn capable of up-dating records by adding, editing or modifying, deleting unnecessary records, and also retrieval of any specified records.

3.5.1. THE REPORT GENERATION STAGE.

This stage deals with outputting the records as reports for documentation purposes. It generates detailed report of all records. The overall intention is to develop or design a DBMS that will be able to create, delete, add, modify and enable the user(s) to access individual records within the database and generate useful information in form of reports.

3.6.FILE CREATION.

The things under consideration here are those that deal mainly with Database file specifications in the files created. Item to be computerized in the system include:-

Database file name.

Data items.

Data item description.

1. Database file name: QUEST. DBF.
2. Data items: Fields, field name, field type, field width, Decimal, Index.

Data item description.

FIELDS	FIELDNAME	FIELDTYPE	WIDTH	DEC	INDEX
22.	Page	Numeric	4	-	N
23.	Survey month	Character	15	-	N
24.	Stratum	Character	10	-	N

25	State	Character	15	-	N
26.	L.G.A	Character	15	-	N
27.	Locality	Character	15	-	N
28	E.A	Character	15	-	N
29.	Building No.	Numeric	10	-	N
30.	H.H.NO.	Numeric	10	-	N
31.	State code	Numeric	6	-	N
32.	L.G.A Code	Numeric	6	-	N
33.	Locality Code	Numeric	6	-	N

2.Database File Name: Q Tab1. DBF

Data items: Fields, Fieldname, Field type, Field width, Decimal, Index.

Data item description:

FIELDS	FIELDNAME	FIELDTYPE	WIDTH	DEC	INDEX
8.	Serial Number	Numeric	4	-	N
9.	Full Name	Character	25	-	N
10.	Age	Numeric	4	-	N
11.	Sex	Numeric	3	-	N
12.	Nationality	Numeric	3	-	N
13	Marital Status	Numeric	3	-	N
14.	Relationship	Numeric	3	-	N

3). Database File Name: Qtab2. DBF

Data items: Fields, Fieldname, Field type, Field width, Decimal, Index.

Data items description:

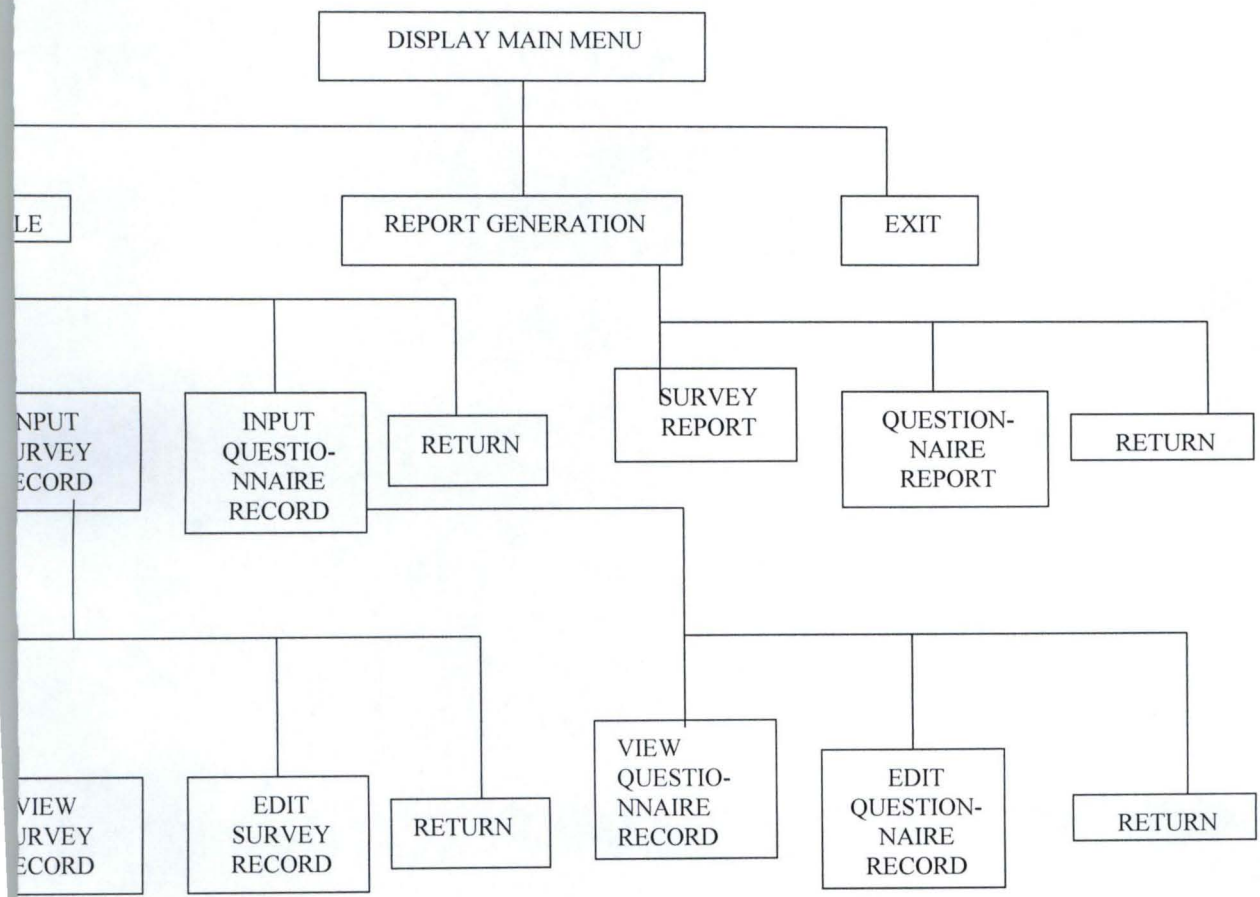
FIELDS	FIELDNAME	FIELDTYPE	WIDTH	DEC	INDE X
6.	Serial Number	Numeric	4	-	N
7.	Can read or write	Numeric	3	-	N
8.	Highest Educ. Qualif.	Numeric	3	-	N
9	Special Educ. Training	Numeric	3	-	N
10.	Activity status lat week	Numeric	3	-	N

3.7. WRITING THE PROGRAM

The program in this project is written using one of the structured Query languages (SQL) called Fox Pro 2.6 for windows.

Fox Pro 2.6 for windows is one of the Classic Database Management System (DBMS) for microcomputers. It is a very powerful and flexible system, which is capable of storing, organizing and retrieving information on a microcomputer. It has the advantage of an improved interface between the user and his information, allowing the user to interact with his data through menu selection.

Fox pro 2.6 for a window is a programming language that enables the user to construct his database application. The programming language includes commands to perform conditional branching, looping, calculations, and sort records, format input screens and output reports.


DISPLAY MAIN MENU
LE
REPORT GENERATION
EXIT
NPUT
URVEY
ECORD
INPUT
QUESTIO-
NNAIRE
RECORD
RETURN
SURVEY
REPORT
QUESTION-
NAIRE
REPORT
RETURN
VIEW
URVEY
ECORD
EDIT
SURVEY
RECORD
RETURN
VIEW
QUESTIO-
NNAIRE
RECORD
EDIT
QUESTION-
NAIRE
RECORD
RETURN

CHAPTER FOUR

4.0. SYSTEM INSTALLATION AND MAINTENACE

4.1. SYSTEM INSTALLATION:

Apart from the purposes of information storage on files, it is expected that documents would need to be typed on a word processor and printed out. Because of this the installation of the new system requires that a Microcomputer be installed. The equipments are to be installed in an uncarpeted dust proof room, which has a cooling system; stabilizers, regular power supply and an uninterruptible power supply (UPS) system.

It is necessary to meet the above conditions to ensure that the system works in a good environment and efficiently too.

4.2. SYSTEM TESTING:

The programs developed have been tested and are performing according to specifications. The programs written and the output on the three-report generation of the three files are shown in the Appendix.

4.3. SYSTEM TRAINING.

The training of personnel that will be responsible for the new system will have to focus on the personnel that are presently responsible for data collection and analysis in the organization. These are program officers in the professional departments of Manpower Planning Research and Statistics, and Manpower Development and

Utilization. The training for operators of the new system will depend on the level of training required by each staff, which will be determined, by the level of involvement in data processing. The method of training being recommended is the in-service type, for both the operators and data entry personnel.

4.3.SYSTEM CONVERSION:

This is the process of changing from the old system to the new system. The method being used for this process is that of gradually changing from the old manual system to the new computerized system. This is to give the personnel the opportunity to acquire enough training to be able to implement the new system, while still using the old one so as to avoid misplacement and delays in priority of workload.

4.4. SYSTEM EVALUATION

The newly designed and developed system is very easy to implement. It is a more reliable and maintainable system because of the facilities being offered by the Fox Pro 2.6 for windows software package, that is, a Query Language System. It is user friendly because the user is able to interact with the system.

The system specifications and requirements do not allow for errors while in use. The user is always prompted to ascertain the correctness of input data before processing and outputting the result. In the case where such errors have to occur, there are specifications for error correction. The hardware is certified to perform perfectly with a stand by uninterruptible power supply (UPS) unit, within a well provided good colling environment

4.6 SYSTEM MAINTENANCE

A maintainable system is one, which has taken into consideration how unforeseen problems, which may come up, can be overcome. A system has to be maintainable.

This is taken care of by making sure that the system is in perfect working condition. The user of the system will then have to make sure that any irregularity with the system is recorded and rectified as quickly as possible.

The organization is a dynamic one, and its requirements may change from time to time. The system will have to be examined to see if it can cope with such changes. Strict compliance with the rules guiding the usage of computer and the new system has to be observed in order to prevent overtaxing the new system. This also helps in reducing the abuse of the computer.

Maintainability is taken care of by making sure all irregularities are recorded and rectified. The system built can thus be maintained since it is not a complex one which may require that users have to go beyond specified rules, except in the case where the system comes under modification.

CHAPTER FIVE

5.0. OBSERVATION, RECOMMENDATIONS AND CONCLUSION

5.1.OBSERVATIONS

The research work has shown that record keeping is very important for decision-making, and that data collection through surveys, can be computerized by the organization.

The manual system of data collection and processing has proven to be ineffective in terms of poor storage of data, data security and information retrieval. Considering the increasing volumes of data handled by the organization, the introduction of a computerized system which will make information processing to be fast, easily accessed and better in terms of data handling from data collection, to input of data, processing, storage, retrieval and report generation will enhance better management of the organization. It will also improve its operations which will justify the huge financial implications in changing to the new system and make research easier.

5.2. RECOMMENDATIONS

The system is very viable in the efficient and effective handling of data processing, storage, retrieval and security in the organization. In view of this therefore, one does not hesitate in recommending that the Board should change from the present manual data collection and processing system to the newly introduced computerized system.

This is very important because the National Manpower Board is saddled with the main task of conducting researches into the manpower problems of this nation. In doing this, a lot of data are collected and there is need for urgent results, which makes faster processing necessary. This is made possible by the new system.

The capability of the new system to fastly process, store and give accurate information in addition to the facilities discussed earlier, will facilitate the smooth execution of the mandate of the Board in terms of data collection, processing and storage.

In view of this, a recommendation is also being made for the establishment of a computer room in the Board where the Microcomputer can be installed. Word processors are needed for routine typing works and also an Epson or Leaser jet printer will be needed for printing information. The computer room also requires an air conditioner; an uninterruptible power supply (UPS) and the room should be dust proof. It is recommended too, that the Board should embark on the training of personnel who will operate and get the required results out of the computer. In fact every staff should be given a level of training commensurate with his/her level of involvement with the computer.

5.3. CONCLUSION

Policy oriented researches, as those conducted by the National Manpower Board are studies and investigations whose rationale is to advance knowledge, which policy makers and implementers can successfully transfer into specific policies, programmes and project. Indeed the contribution of research to human resources development planning and utilization is very critical to the solution of the unemployment problem faced by Nigeria today.

The importance of labour market statistics in manpower planning for national development cannot be underplayed in any economy. As the only and most important factor of production, developing manpower constitutes the catalyst in transforming society and institutions from a given level of development to a higher one. It is therefore necessary to investigate through research, the stock of manpower available,

the changes taking place in that stock, its structure, distribution by space, sector and extent of use. Herein lies the importance of labour market statistics for management information.

The National Manpower Board (NMB) was established in 1962 with the main mandate to ensure the optimal development and utilization of human resources of the nation. Over the years the Board have conducted researches into the various aspects of labour and manpower requirement problems in pursuant to executing its mandates, and have been able to evolve into a more research oriented outfit than hitherto.

One of the basic constraints of the Board aside from financial resources is the manual nature of conducting its research. The process of research, starting from program articulation, data collection, data processing and analysis to result presentation has been done manually. This has affected the efforts of the Board in delivering its mandates.

With the kind of volume of work, which such an enterprise entails, a proposal was submitted to the management in which suggestions and recommendations were made after the feasibility studies.

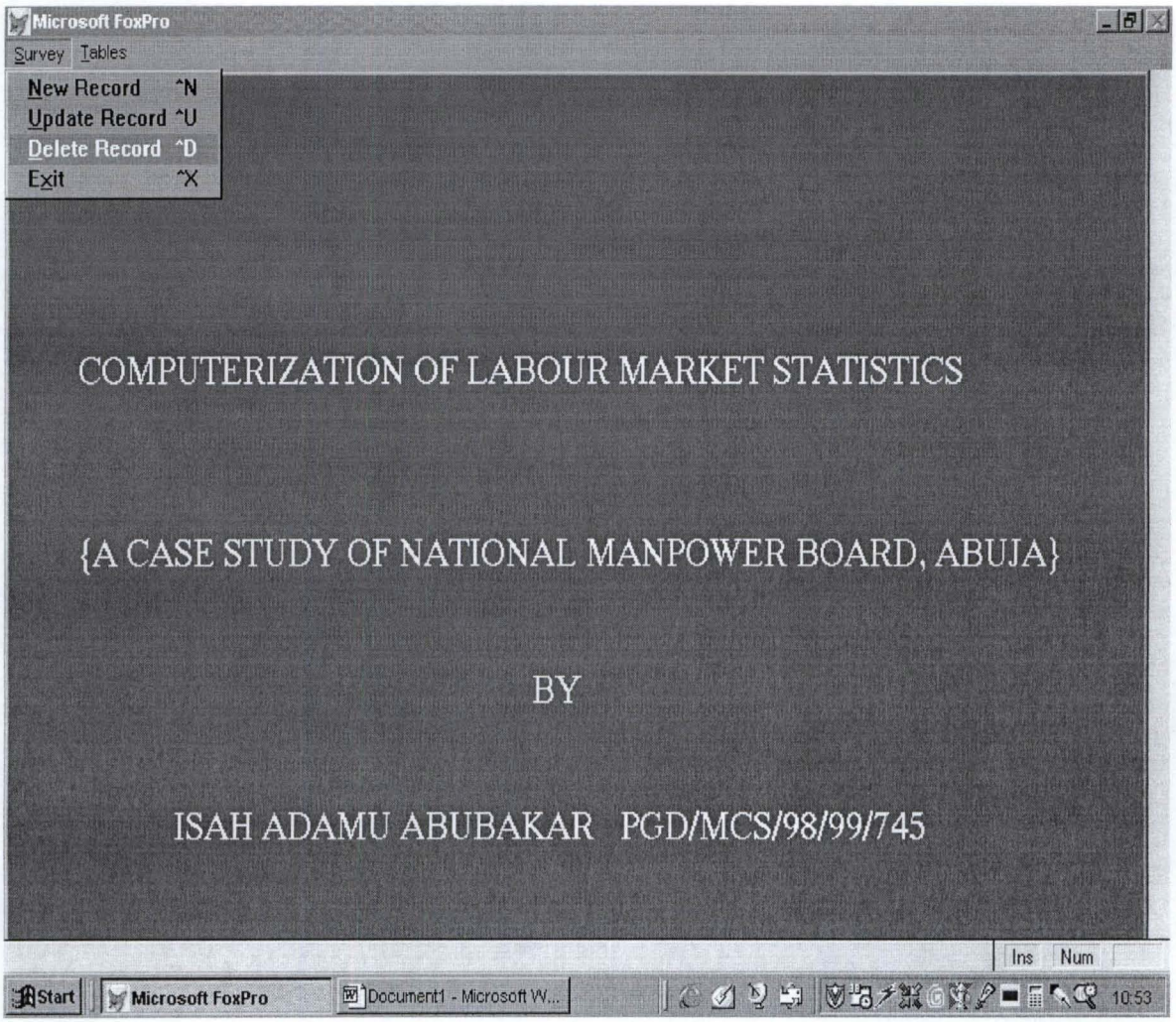
After the analysis of the present system, the researcher then forwarded a proposal on the computerization of research methods at the Board starting with labour market statistics. The new system developed is aimed at automating the data collections, processing and storage system to ease the problem being faced by the Board in areas of accuracy of data, processing and outputting of information as well as the speed of retrieval, processing, reliability and storage of such information

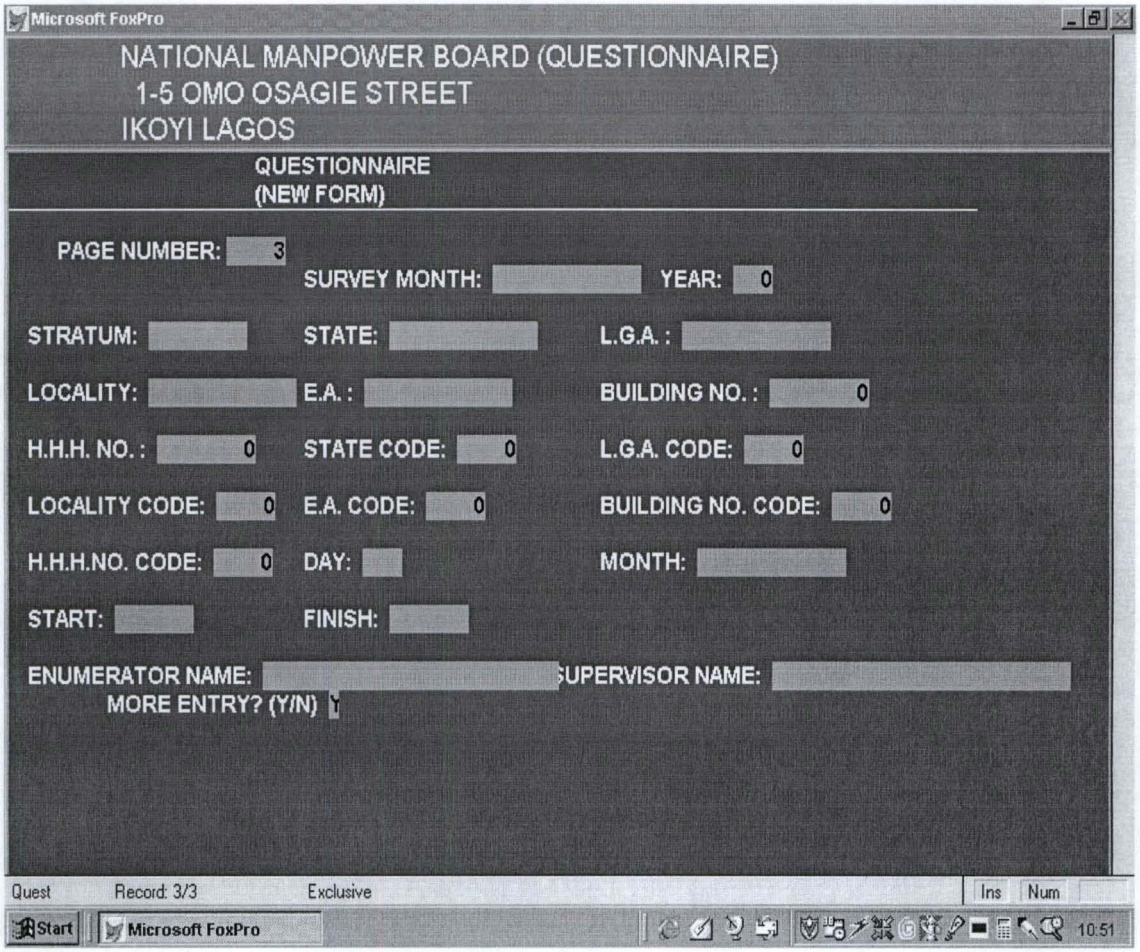
REFERENCES

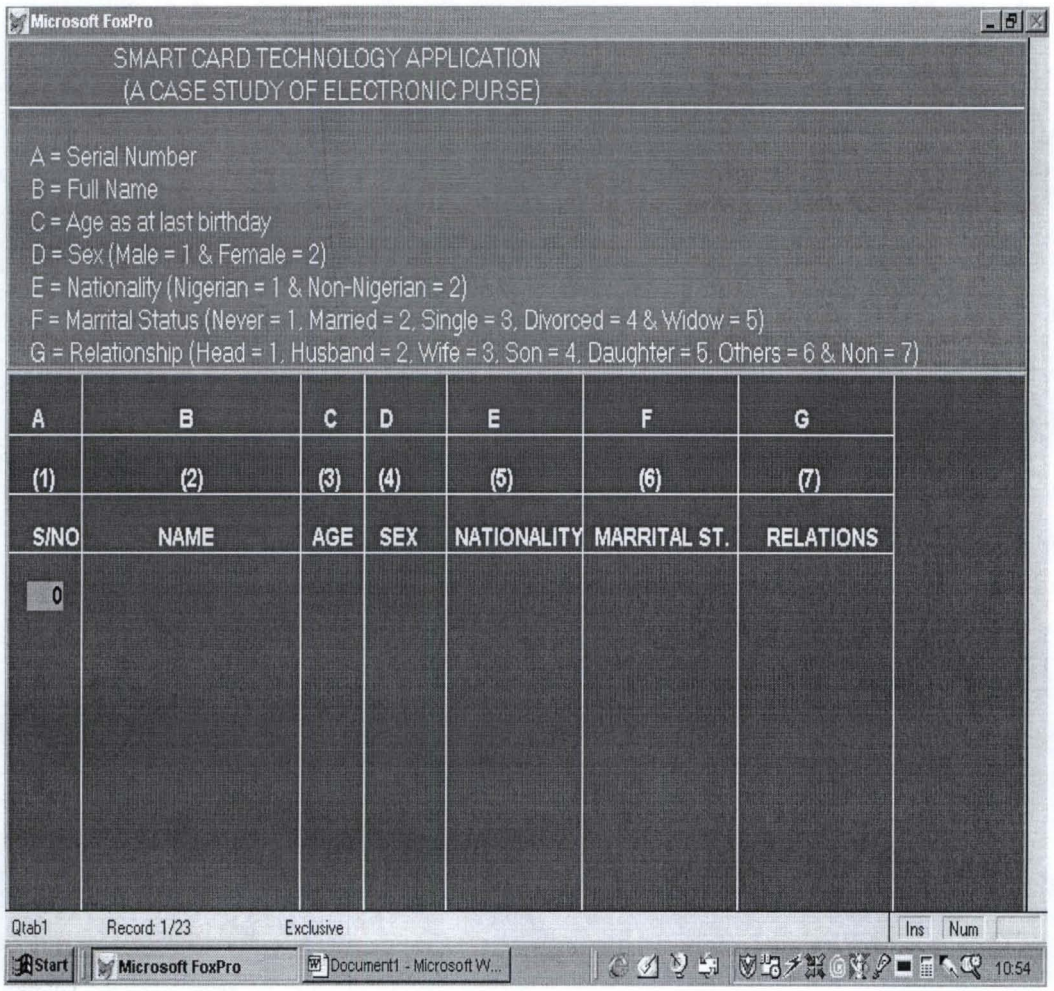
1. ANDERSON, K.G, (1990): "Data Processing Principles and Practice" Vol.1, M&E Handbook 7th edition.
2. AUISON, D.E. (1989): "Information Systems Development:" Dbase Approach – Blackwell Scientific Publications, London.
3. IKPEZE, N.I. (1999): "Application of Labour Statistics to Policy Formulation, Programme Design and Evaluation:" A training Module Presented at the National Workshop on "Current issues in Manpower planning," organized by NMB at Lagos (March 23- 24, 1999).
4. IWUNOR, C. (1999): "Techniques and Statistical Tools for Analysis of Labour Statistics:" A training Module presented the National Workshop on "Current issues in Manpower Planning," organized by NMB at Lagos (March23 – 24, 1999)
5. MNB, (1991): "Report of Study of Nigeria's Manpower Stock and Requirements."
6. NMB, (1997): "Annual Reports and Accounts."
7. NMB, (1998): "The Study of the Nigerian Labour Market, Phase one, Lagos State," NMB Studies No. 30.
8. NMB, (July, 2000) "Manpower News, No.13."
9. TIAMIYU, M.A. (2000): "Information Technology, Computer and other Aids to Research:" A paper presented at a Manpower Research, Planning and Development Techniques Workshop, organized by NMB Staff by NCEMA, Ibadan, (June 12 – 16, 2000).

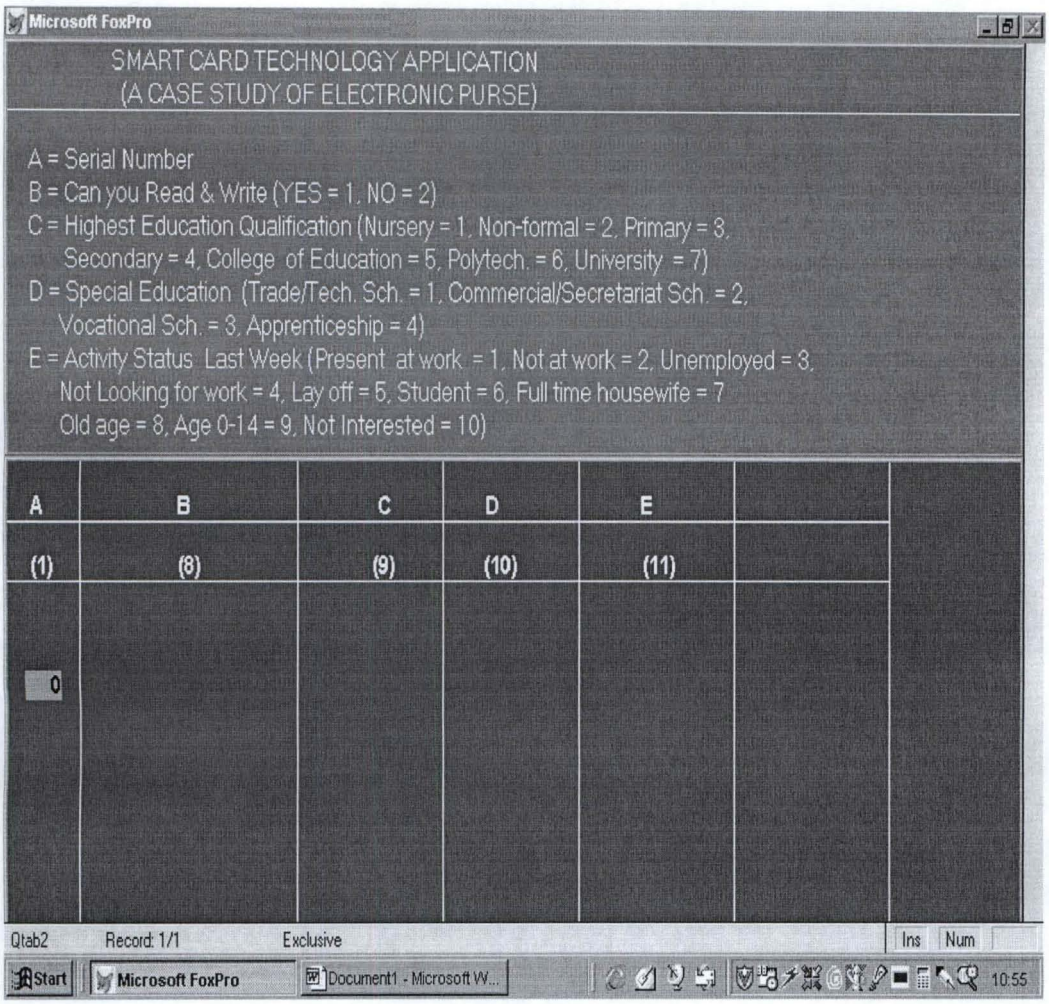
APPENDIX

PROGRAM OUTPUT




Microsoft FoxPro
NATIONAL MANPOWER BOARD (QUESTIONNAIRE)
1-5 OMO OSAGIE STREET
IKOYI LAGOS
QUESTIONNAIRE
(NEW FORM)
PAGE NUMBER: 3
SURVEY MONTH:
YEAR: 0
STRATUM:
STATE:
L.G.A. :
LOCALITY:
E.A. :
BUILDING NO. : 0
H.H.H. NO. : 0
STATE CODE: 0
L.G.A. CODE: 0
LOCALITY CODE: 0
E.A. CODE: 0
BUILDING NO. CODE: 0
H.H.H.NO. CODE: 0
DAY:
MONTH:
START:
FINISH:
ENUMERATOR NAME:
SUPERVISOR NAME:
MORE ENTRY? (Y/N) Y
Quest
Record: 3/3
Exclusive
Ins
Num
Start
Microsoft FoxPro
10:51


Microsoft FoxPro
SMART CARD TECHNOLOGY APPLICATION
(A CASE STUDY OF ELECTRONIC PURSE)
A = Serial Number
B = Full Name
C = Age as at last birthday
D = Sex (Male = 1 & Female = 2)
E = Nationality (Nigerian = 1 & Non-Nigerian = 2)
F = Marrital Status (Never = 1, Married = 2, Single = 3, Divorced = 4 & Widow = 5)
G = Relationship (Head = 1, Husband = 2, Wife = 3, Son = 4, Daughter = 5, Others = 6 & Non = 7)
A
B
C
D
E
F
G
(1)
(2)
(3)
(4)
(5)
(6)
(7)
S/NO
NAME
AGE
SEX
NATIONALITY
MARRITAL ST.
RELATIONS
0
Qtab1
Record: 1/23
Exclusive
Ins
Num
Start
Microsoft FoxPro
Document1 - Microsoft W...
10:54


Microsoft FoxPro
SMART CARD TECHNOLOGY APPLICATION
(A CASE STUDY OF ELECTRONIC PURSE)
A = Serial Number
B = Can you Read & Write (YES = 1, NO = 2)
C = Highest Education Qualification (Nursery = 1, Non-formal = 2, Primary = 3,
Secondary = 4, College of Education = 5, Polytech. = 6, University = 7)
D = Special Education (Trade/Tech. Sch. = 1, Commercial/Secretariat Sch. = 2,
Vocational Sch. = 3, Apprenticeship = 4)
E = Activity Status Last Week (Present at work = 1, Not at work = 2, Unemployed = 3,
Not Looking for work = 4, Lay off = 5, Student = 6, Full time housewife = 7
Old age = 8, Age 0-14 = 9, Not Interested = 10)
A
B
C
D
E
(1)
(8)
(9)
(10)
(11)
0
Qtab2
Record: 1/1
Exclusive
Ins
Num
Start
Microsoft FoxPro
Document1 - Microsoft W...
10:55

PROGRAM CODE

```
*** Name this program ACTIPOP.PRG ***
SET TALK OFF
SET ECHO OFF
SET STATUS OFF
SET DATE TO BRITIS
SET SCOREBOARD OFF
SET CENTURY ON
CLEAR

SET SYSMENU SAVE
SET SYSMENU TO
DEFINE WINDOW mytitle;
        FROM 0,0 TO 50,98 PANEL COLOR W+/BR+;
        FONT 'ARIAL ',18;
        STYLE 'A2'
ACTIVATE WINDOW mytitle
@6,4 SAY "COMPUTERIZATION OF LABOUR MARKET STATISTICS"
@10,4 SAY "{A CASE STUDY OF NATIONAL MANPOWER BOARD, ABUJA}"
@13,4 SAY "                                    BY"
@16,4 SAY "        ISAH ADAMU ABUBAKAR   PGD/MCS/98/99/745"

DEFINE PAD surveypad OF _msysmenu PROMPT '\<Survey' COLOR SCHEME 3 ;
        KEY alt+s, ''
DEFINE PAD tablespad OF _msysmenu PROMPT '\<Tables' COLOR SCHEME 3 ;
        KEY alt+t, ''

ON PAD surveypad OF _msysmenu ACTIVATE POPUP survey
ON PAD tablespad OF _msysmenu ACTIVATE POPUP tables

DEFINE POPUP survey MARGIN RELATIVE SHADOW COLOR SCHEME 4
DEFINE BAR 1 OF survey PROMPT '\<New Record' KEY ctrl+s, '^N'
DEFINE BAR 2 OF survey PROMPT '\<Update Record' KEY ctrl+s, '^U'
DEFINE BAR 3 OF survey PROMPT '\<Delete Record' KEY ctrl+s, '^D'
DEFINE BAR 4 OF survey PROMPT 'E\<xit' KEY ctrl+x, '^X'

ON SELECTION POPUP survey;
        DO choice IN actipop WITH PROMPT( ), POPUP( )
```

```
DEFINE POPUP tables MARGIN RELATIVE SHADOW COLOR SCHEME 4
DEFINE BAR 1 OF tables PROMPT '\<Questionnaire Table 1' KEY ctrl+q, '^Q'
DEFINE BAR 2 OF tables PROMPT 'Q\<uestionnaire Table 2' KEY ctrl+u, '^U'

ON SELECTION POPUP tables;
	DO choice IN actipop WITH PROMPT( ), POPUP( )

PROCEDURE choice
	PARAMETERS mprompt, mpopup
	WAIT WINDOW 'You chose ' + mprompt + ;
		' from popup ' + mpopup NOWAIT

	IF mprompt = 'Exit'
		SET SYSMENU NOSAVE
		SET SYSMENU OFF
		ACTIVATE SCREEN
		RELEASE WINDOW mytitle
		SET SYSMENU TO DEFAULT
	ENDIF

	IF mprompt = 'Questionnaire Table 1'
		SET SYSMENU NOSAVE
		SET SYSMENU OFF
		RELEASE WINDOW mytitle
		DO qtabb1
	ENDIF

	IF mprompt = 'Questionnaire Table 2'
		SET SYSMENU NOSAVE
		SET SYSMENU OFF
		RELEASE WINDOW mytitle
		DO qtabb2
	ENDIF

	IF mprompt = 'New Record'
		SET SYSMENU NOSAVE
		SET SYSMENU OFF
		RELEASE WINDOW mytitle
		DO nsur
	ENDIF

	IF mprompt = 'Update Record'
		SET SYSMENU NOSAVE
		SET SYSMENU OFF
		RELEASE WINDOW mytitle
		DO usur
	ENDIF

	IF mprompt = 'Delete Record'
```

```
            SET SYSMENU NOSAVE
            SET SYSMENU OFF
            RELEASE WINDOW mytitle
            DO dsur
        ENDIF

PROCEDURE head1
        CLEAR
        DEFINE WINDOW HEAD;
                FROM 0,0 TO 17,98 PANEL COLOR W+/G;
                FONT 'MS SANS SERIF',13;
                STYLE 'A1'
        ACTIVATE WINDOW HEAD
        @0,10 SAY "SMART CARD TECHNOLOGY APPLICATION "
        @1,10 SAY "  (A CASE STUDY OF ELECTRONIC PURSE)"
        @2,0 TO 2,112 DOUB
        @3,2 SAY "A = Serial Number"
        @4,2 SAY "B = Full Name"
        @5,2 SAY "C = Age as at last birthday"
        @6,2 SAY "D = Sex (Male = 1 & Female = 2)"
        @7,2 SAY "E = Nationality (Nigerian = 1 & Non-Nigerian = 2)"
        @8,2 SAY "F = Marrital Status (Never = 1, Married = 2, Single = 3, Divorced
= 4 & Widow = 5)"
        @9,2 SAY "G = Relationship (Head = 1, Husband = 2, Wife = 3, Son = 4,
Daughter = 5, Others = 6 & Non = 7)"
        RETURN


PROCEDURE qtabb1
        ans="Y"
        DO WHILE ans="Y"
                USE qtab1
                DO head1
                DEFINE WINDOW myadd;
                        FROM 17,0 TO 55,98 PANEL COLOR W+/R;
                        FONT 'ARIAL',11;
                        STYLE 'B3'
                ACTIVATE WINDOW myadd
                CLEAR
                STORE 0 TO msn1,mag1,mse1,mnat1,mma1,mre1
                STORE SPACE(22) TO mnam1
                STORE 0 TO msn2,mag2,mse2,mnat2,mma2,mre2
                STORE SPACE(22) TO mnam2
                STORE 0 TO msn3,mag3,mse3,mnat3,mma3,mre3
                STORE SPACE(22) TO mnam3
                STORE 0 TO msn4,mag4,mse4,mnat4,mma4,mre4
                STORE SPACE(22) TO mnam4
                STORE 0 TO msn5,mag5,mse5,mnat5,mma5,mre5
                STORE SPACE(22) TO mnam5
```

```
            @1,2 SAY " A                B              C     D          E
F               G"
            @2,0 TO 2,97 DOUB
            @3,2 SAY " (1)              (2)            (3)   (4)
(5)             (6)             (7)"
            @4,0 TO 4,97 DOUB
            @5,2 SAY " S/NO         NAME            AGE   SEX
NATIONALITY  MARRITAL ST.    RELATIONS "
            @6,0 TO 6,97 DOUB
            @0,8 TO 21,8 DOUB
            @0,32 TO 21,32 DOUB
            @0,39 TO 21,39 DOUB
            @0,48 TO 21,48 DOUB
            @0,63 TO 21,63 DOUB
            @0,80 TO 21,80 DOUB
            @0,97 TO 21,97 DOUB
            @21,0 TO 21,97 DOUBLE
            @7,2 GET msn1 PICT "9999"
            READ
            IF msn1=0
                  WAIT WINDOW "NULL Entry is NOT allowed, O.K"
            ELSE
                  LOCATE ALL FOR sn1=msn1 .OR. sn2=msn1 .OR.
sn3=msn1 .OR. sn4 = msn1 .OR. sn5 = msn1
                  IF FOUND()
                        WAIT WINDOW "This Serial Number Exist in the
database , O.K"
                  ELSE
                        @7,9 GET mnam1 PICT "@!"
                        @7,32 GET mag1 PICT "999"
                        @7,42 GET mse1 PICT "999"
                        @7,52 GET mnat1 PICT "999"
                        @7,66 GET mma1 PICT "999"
                        @7,83 GET mre1 PICT "999"
                        @9,9 GET mnam2 PICT "@!"
                        @9,32 GET mag2 PICT "999"
                        @9,42 GET mse2 PICT "999"
                        @9,52 GET mnat2 PICT "999"
                        @9,66 GET mma2 PICT "999"
                        @9,83 GET mre2 PICT "999"
                        @11,9 GET mnam3 PICT "@!"
                        @11,32 GET mag3 PICT "999"
                        @11,42 GET mse3 PICT "999"
                        @11,52 GET mnat3 PICT "999"
                        @11,66 GET mma3 PICT "999"
                        @11,83 GET mre3 PICT "999"
                        @13,9 GET mnam4 PICT "@!"
                        @13,32 GET mag4 PICT "999"
                        @13,42 GET mse4 PICT "999"
                        @13,52 GET mnat4 PICT "999"
```

```
                    @13,66 GET mma4 PICT "999"
                    @13,83 GET mre4 PICT "999"
                    @15,9 GET mnam5 PICT "@!"
                    @15,32 GET mag5 PICT "999"
                    @15,42 GET mse5 PICT "999"
                    @15,52 GET mnat5 PICT "999"
                    @15,66 GET mma5 PICT "999"
                    @15,83 GET mre5 PICT "999"
                    READ
                    msn2=msn1+1
                    msn3=msn1+2
                    msn4=msn1+3
                    msn5=msn1+4
                    @9,0 SAY msn2
                    @11,0 SAY msn3
                    @13,0 SAY msn4
                    @15,0 SAY msn5
                    APPEND BLANK
                    REPL sn1 WITH msn1,nam1 WITH mnam1,ag1 WITH
mag1,se1 WITH mse1
                    REPL nat1 WITH mnat1,ma1 WITH mma1,re1 WITH
mre1
                    REPL sn2 WITH msn2,nam2 WITH mnam2,ag2 WITH
mag2,se2 WITH mse2
                    REPL nat2 WITH mnat2,ma2 WITH mma2,re2 WITH
mre2
                    REPL sn3 WITH msn3,nam3 WITH mnam3,ag3 WITH
mag3,se3 WITH mse3
                    REPL nat3 WITH mnat3,ma3 WITH mma3,re3 WITH
mre3
                    REPL sn4 WITH msn4,nam4 WITH mnam4,ag4 WITH
mag4,se4 WITH mse4
                    REPL nat4 WITH mnat4,ma4 WITH mma4,re4 WITH
mre4
                    REPL sn5 WITH msn5,nam5 WITH mnam5,ag5 WITH
mag5,se5 WITH mse5
                    REPL nat5 WITH mnat5,ma5 WITH mma5,re5 WITH
mre5
                ENDIF
            ENDIF
            @22,18 SAY "MORE ? (Y/N)" GET ans PICT "!"
            READ
        ENDDO
        DEACTIVATE WINDOWS ALL
        CLOSE DATABASE
        DO actipop
        RETURN

PROCEDURE head2
        CLEAR
```

```
    DEFINE WINDOW HEAD;
        FROM 0,0 TO 6,98 PANEL COLOR W+/G;
        FONT 'ARIAL',14;
        STYLE 'A1'
    ACTIVATE WINDOW HEAD
    @0,10 SAY "NATIONAL MANPOWER BOARD (QUESTIONNAIRE) "
    @1,10 SAY "  1-5 OMO OSAGIE STREET"
    @2,10 SAY "IKOYI LAGOS"
    *       @3,0 TO 3,80 DOUB
    RETURN

PROCEDURE DATA
    *@2,2 SAY "PAGE NUMBER: " GET MPG PICT "9999"
    @4,30 SAY "SURVEY MONTH: " GET msm PICT "@!"
    @4,66 SAY "YEAR: " GET msy PICT "9999"
    @6,2 SAY "STRATUM: " GET ms PICT "@!"
    @6,30 SAY "STATE: " GET mst PICT "@!"
    @6,60 SAY "L.G.A. : " GET mlga PICT "@!"
    @8,2 SAY "LOCALITY: " GET ml PICT "@!"
    @8,30 SAY "E.A. : " GET mea PICT "@!"
    @8,60 SAY "BUILDING NO. : " GET mbno PICT "9999999999"
    @10,2 SAY "H.H.H. NO. : " GET mhhno PICT "9999999999"
    @10,30 SAY "STATE CODE: " GET msc PICT "999999"
    @10,60 SAY "L.G.A. CODE: " GET mlgac PICT "999999"
    @12,2 SAY "LOCALITY CODE: " GET mlc PICT "999999"
    @12,30 SAY "E.A. CODE: " GET meac PICT "999999"
    @12,60 SAY "BUILDING NO. CODE: " GET mbnoc PICT "999999"
    @14,2 SAY "H.H.H.NO. CODE: " GET mhhnoc PICT "999999"
    @14,30 SAY "DAY: " GET mday PICT "@!"
    @14,60 SAY "MONTH: " GET mm PICT "@!"
    @16,2 SAY "START: " GET msta PICT "@!"
    @16,30 SAY "FINISH: " GET msfin PICT "@!"
    @18,2 SAY "ENUMERATOR NAME: " GET men PICT "@!"
    @18,55 SAY "SUPERVISOR NAME: " GET msn PICT "@!"
    RETURN

PROCEDURE nsur
    ans="Y"
    DO WHILE ans="Y"
        USE quest
        DO head2
        DEFINE WINDOW myadd;
            FROM 6,0 TO 55,98 PANEL COLOR W+/R;
            FONT 'ARIAL',11;
            STYLE 'B3'
        ACTIVATE WINDOW myadd
        CLEAR
        STORE 0 TO mpg
        @0,25 SAY "QUESTIONNAIRE "
        @1,25 SAY "(NEW FORM)"
```

```
            @2,0 TO 2,98 PANEL
            @3,5 SAY "PAGE NUMBER:" GET mpg PICT "999999"
            READ
            IF mpg=0
                  @8,10 SAY "NULL Entry is NOT allowed, O.K"
                  WAIT
            ELSE
                  LOCATE ALL FOR pg=mpg
                  IF FOUND()
                        @8,10 SAY "This Number is Recorded, O.K"
                        WAIT
                  ELSE
                        STORE 0 TO
mhhnoc,mbnoc,meac,mlc,mlgac,msc,mhhno,mbno,msy
                        STORE SPACE(15) TO msm
                        STORE SPACE(10) TO ms
                        STORE SPACE(15) TO mst
                        STORE SPACE(15) TO mlga
                        STORE SPACE(15) TO ml
                        STORE SPACE(15) TO mea
                        STORE SPACE(4) TO mday
                        STORE SPACE(15) TO mm
                        STORE SPACE(8) TO msta
                        STORE SPACE(8) TO msfin
                        STORE SPACE(30) TO men
                        STORE SPACE(30) TO msn
                        DO DATA
                        READ
                        APPEND BLANK
                        REPL pg WITH mpg,sm WITH msm,sy WITH msy,s
WITH ms,st WITH mst,lga WITH mlga
                        REPL l WITH ml,ea WITH mea,bno WITH mbno,hhno
WITH mhhno,sc WITH msc
                        REPL lgac WITH mlgac,lc WITH mlc,eac WITH
meac,bnoc WITH mbnoc,hhnoc WITH mhhnoc
                        REPL DAY WITH mday,m WITH mm,sta WITH
msta,sfin      WITH msfin,en WITH men,sn WITH msn
                  ENDIF
            ENDIF
            @19,10 SAY "MORE ENTRY? (Y/N) " GET ans PICT "!"
            READ
      ENDDO
ENDIF
DEACTIVATE WINDOWS ALL
DO actipop
CLOSE DATABASE
RETURN


PROCEDURE usur
```

```
ans="Y"
DO WHILE ans="Y"
        USE quest
        DO head2
        DEFINE WINDOW myadd;
                FROM 6,0 TO 55,98 PANEL COLOR GB+/R;
                FONT 'ARIAL',11;
                STYLE 'B3'
        ACTIVATE WINDOW myadd
        CLEAR
        STORE 0 TO mpg
        @0,25 SAY "QUESTIONNAIRE "
        @1,25 SAY "(UPDATE FORM)"
        @2,0 TO 2,98 PANEL
        @3,5 SAY "PAGE NUMBER:" GET mpg PICT "999999"
        READ
        IF mpg=0
                @8,10 SAY "NULL Entry is NOT allowed, O.K"
                WAIT
        ELSE
                LOCATE ALL FOR pg=mpg
                IF .NOT. FOUND()
                        @8,10 SAY "This Number does not exist , O.K"
                        WAIT
                ELSE
                        STORE hhnoc TO mhhnoc
                        STORE bnoc TO mbnoc
                        STORE eac TO meac
                        STORE lc TO mlc
                        STORE lgac TO mlgac
                        STORE sc TO msc
                        STORE hhno TO mhhno
                        STORE bno TO mbno
                        STORE sy TO msy
                        STORE sm TO msm
                        STORE s TO ms
                        STORE st TO mst
                        STORE lga TO mlga
                        STORE l TO ml
                        STORE ea TO mea
                        STORE DAY TO mday
                        STORE m TO mm
                        STORE sta TO msta
                        STORE sfin TO msfin
                        STORE en TO men
                        STORE sn TO msn
                        DO DATA
                        READ
                        REPL pg WITH mpg,sm WITH msm,sy WITH msy,s
WITH ms,st WITH mst,lga WITH mlga
```

```
                        REPL l WITH ml,ea WITH mea,bno WITH mbno,hhno
WITH mhhno,sc WITH msc
                        REPL lgac WITH mlgac,lc WITH mlc,eac WITH
meac,bnoc WITH mbnoc,hhnoc WITH mhhnoc
                        REPL DAY WITH mday,m WITH mm,sta WITH
msta,sfin       WITH msfin,en WITH men,sn WITH msn
                    ENDIF
                ENDIF
                @19,10 SAY "UPDATE MORE? (Y/N) " GET ans PICT "!"
                READ
        ENDDO
ENDIF
DEACTIVATE WINDOWS ALL
DO actipop
CLOSE DATABASE
RETURN


PROCEDURE dsur
        ans="Y"
        DO WHILE ans="Y"
                USE quest
                DO head2
                DEFINE WINDOW myadd;
                        FROM 6,0 TO 55,98 PANEL COLOR GB/BR+;
                        FONT 'ARIAL',11;
                        STYLE 'B3'
                ACTIVATE WINDOW myadd
                CLEAR
                STORE 0 TO mpg
                @0,25 SAY "QUESTIONNAIRE "
                @1,25 SAY "(UPDATE FORM)"
                @2,0 TO 2,98 PANEL
                @3,5 SAY "PAGE NUMBER:" GET mpg PICT "999999"
                READ
                IF mpg=0
                        @8,10 SAY "NULL Entry is NOT allowed, O.K"
                        WAIT
                ELSE
                        LOCATE ALL FOR pg=mpg
                        IF .NOT. FOUND()
                                @8,10 SAY "This Number does not exist , O.K"
                                WAIT
                        ELSE
                                STORE hhnoc TO mhhnoc
                                STORE bnoc TO mbnoc
                                STORE eac TO meac
                                STORE lc TO mlc
                                STORE lgac TO mlgac
                                STORE sc TO msc
```

```
                        STORE hhno TO mhhno
                        STORE bno TO mbno
                        STORE sy TO msy
                        STORE sm TO msm
                        STORE s TO ms
                        STORE st TO mst
                        STORE lga TO mlga
                        STORE l TO ml
                        STORE ea TO mea
                        STORE DAY TO mday
                        STORE m TO mm
                        STORE sta TO msta
                        STORE sfin TO msfin
                        STORE en TO men
                        STORE sn TO msn
                        DO DATA
                        CLEAR GETS
                        STORE "N" TO req
                        @19,10 SAY "Delete this Record? (Y/N)" GET req
PICT "!"
                        READ
                        IF req='Y'
                                DELETE
                                PACK
                        ENDIF
                        @19,0 CLEAR TO 19,130
                    ENDIF
                ENDIF
                @19,10 SAY "DELETE MORE ? (Y/N) " GET ans PICT "!"
                READ
        ENDDO
ENDIF
DEACTIVATE WINDOWS ALL
DO actipop
CLOSE DATABASE
RETURN


PROCEDURE head3
        CLEAR
        DEFINE WINDOW HEAD;
                FROM 0,0 TO 21,98 PANEL COLOR W+/G;
                FONT 'MS SANS SERIF',13;
                STYLE 'A1'
        ACTIVATE WINDOW HEAD
        @0,10 SAY "SMART CARD TECHNOLOGY APPLICATION "
        @1,10 SAY "  (A CASE STUDY OF ELECTRONIC PURSE)"
        @2,0 TO 2,112 DOUB
        @3,2 SAY "A = Serial Number"
        @4,2 SAY "B = Can you Read & Write (YES = 1, NO = 2)"
```

```
        @5,2 SAY "C = Highest Education Qualification (Nursery = 1, Non-formal =
2, Primary = 3,"
        @6,2 SAY "      Secondary = 4, College  of Education = 5, Polytech. = 6,
University  = 7)"
        @7,2 SAY "D = Special Education  (Trade/Tech. Sch. = 1,
Commercial/Secretariat Sch. = 2,"
        @8,2 SAY "      Vocational Sch. = 3, Apprenticeship = 4)"
        @9,2 SAY "E = Activity Status  Last Week (Present  at work  = 1, Not at
work = 2, Unemployed = 3,"
        @10,2 SAY "     Not Looking for work = 4, Lay off = 5, Student = 6, Full
time housewife = 7"
        @11,2 SAY "     Old age = 8, Age 0-14 = 9, Not Interested = 10)"
        RETURN

PROCEDURE qtabb2
        ans="Y"
        DO WHILE ans="Y"
                USE qtab2
                DO head3
                DEFINE WINDOW myadd;
                        FROM 21,0 TO 57,98 PANEL COLOR W+/R;
                        FONT 'ARIAL',11;
                        STYLE 'B3'
                ACTIVATE WINDOW myadd
                CLEAR
                STORE 0 TO msn1,msn2,msn3,msn4,msn5
                STORE 0 TO mcr1,mcr2,mcr3,mcr4,mcr5
                STORE 0 TO mhe1,mhe2,mhe3,mhe4,mhe5
                STORE 0 TO mse1,mse2,mse3,mse4,mse5
                STORE 0 TO mas1,mas2,mas3,mas4,mas5

                @1,2 SAY " A               B                    C          D
E  "
                @2,0 TO 2,97 DOUB
                @3,2 SAY " (1)             (8)                  (9)
(10)            (11) "
                @4,0 TO 4,97 DOUB
                *@5,2 SAY " S/NO        NAME            AGE    SEX
NATIONALITY  MARRITAL ST.     RELATIONS "
                *@6,0 TO 6,97 DOUB
                @0,8 TO 21,8 DOUB
                @0,32 TO 21,32 DOUB
                *@0,39 TO 21,39 DOUB
                @0,48 TO 21,48 DOUB
                @0,63 TO 21,63 DOUB
                @0,80 TO 21,80 DOUB
                @0,97 TO 21,97 DOUB
                @21,0 TO 21,97 DOUBLE
                @7,2 GET msn1 PICT "9999"
                READ
```

```
            IF msn1=0
                  WAIT WINDOW "NULL Entry is NOT allowed, O.K"
            ELSE
                  LOCATE ALL FOR sn1=msn1 .OR. sn2=msn1 .OR.
sn3=msn1 .OR. sn4 = msn1 .OR. sn5 = msn1
                  IF FOUND()
                        WAIT WINDOW "This Serial Number Exist in the
database , O.K"
                  ELSE
                        @7,9 GET mcr1 PICT "@!"
                        @7,32 GET mhe1 PICT "999"
                        @7,42 GET mse1 PICT "999"
                        @7,52 GET mas1 PICT "999"
                        *@7,66 GET mma1 PICT "999"
                        *@7,83 GET mre1 PICT "999"
                        @9,9 GET mcr2 PICT "@!"
                        @9,32 GET mhe2 PICT "999"
                        @9,42 GET mse2 PICT "999"
                        @9,52 GET mas2 PICT "999"
                        *@9,66 GET mma2 PICT "999"
                        *@9,83 GET mre2 PICT "999"
                        @11,9 GET mcr3 PICT "@!"
                        @11,32 GET mhe3 PICT "999"
                        @11,42 GET mse3 PICT "999"
                        @11,52 GET mas3 PICT "999"
                        *@11,66 GET mma3 PICT "999"
                        *@11,83 GET mre3 PICT "999"
                        @13,9 GET mcr4 PICT "@!"
                        @13,32 GET mhe4 PICT "999"
                        @13,42 GET mse4 PICT "999"
                        @13,52 GET mas4 PICT "999"
                        *@13,66 GET mma4 PICT "999"
                        *@13,83 GET mre4 PICT "999"
                        @15,9 GET mcr5 PICT "@!"
                        @15,32 GET mhe5 PICT "999"
                        @15,42 GET mse5 PICT "999"
                        @15,52 GET mas5 PICT "999"
                        *@15,66 GET mma5 PICT "999"
                        *@15,83 GET mre5 PICT "999"
                        READ
                        msn2=msn1+1
                        msn3=msn1+2
                        msn4=msn1+3
                        msn5=msn1+4
                        @9,0 SAY msn2
                        @11,0 SAY msn3
                        @13,0 SAY msn4
                        @15,0 SAY msn5
                        APPEND BLANK
```

```
                        REPL sn1 WITH msn1,cr1 WITH mcr1,he1 WITH
mhe1,se1 WITH mse1,as1 WITH mas1
                        REPL sn2 WITH msn2,cr2 WITH mcr2,he2 WITH
mhe2,se2 WITH mse2,as2 WITH mas2
                        REPL sn3 WITH msn3,cr3 WITH mcr3,he3 WITH
mhe3,se3 WITH mse3,as3 WITH mas3
                        REPL sn4 WITH msn4,cr4 WITH mcr4,he4 WITH
mhe4,se4 WITH mse4,as4 WITH mas4
                        REPL sn5 WITH msn5,cr5 WITH mcr5,he5 WITH
mhe5,se5 WITH mse5,as5 WITH mas5
                    ENDIF
                ENDIF
                @22,18 SAY "MORE ? (Y/N)" GET ans PICT "!"
                READ
        ENDDO
        DEACTIVATE WINDOWS ALL
        CLOSE DATABASE
        DO actipop
        RETURN
```