POLICE MANAGEMENT INFORMATION SYSTEM: A CASE STUDY OF THE PLATEAU STATE POLICE COMMAND

BY

IKANI DAVID
MTECH/OR/05/0113

BEING MTECH THESIS PRESENTED TO THE DEPARTMENT OF STATISTICS AND OPERATIONS RESEARCH, FEDERAL UNIVERSITY OF TECHNOLOGY, YOLA IN PARTIAL FULFILLMENT OF THE CONDITIONS FOR THE AWARD OF MASTER OF TECHNOLOGY DEGREE IN OPERATIONS RESEARCH

SEPTEMBER, 2012

DECLARATION

I hereby declare that this project work has been written by me and is a record of my research work. It has not been submitted in any form elsewhere for the award of any degree or certificate.

Signature:----------

Name:----------

Reg. No: MTECH----------

Date:----------

CERTIFICATION

This is to certify that this project Titled *"Police Management Information System"* has been examined and approved as meeting the requirements of the Department of Statistics and Operations Research, School of Pure and Applied Sciences, Federal University of Technology, Yola, in partial fulfillment of the conditions for the award of Master of Technology Degree in Operations Research,

Prof. A. Idama **Supervisor**	**Date**
Dr. H. G. Mu'Azu **Internal Examiner**	**Date**
Prof. P. A. Osanaiye **External Examiner**	**Date**
Dr. A. Okolo **Head of Department**	**Date**
Prof. M. R. Odekunle **Dean of Postgraduate**	**Date**

DEDICATION

This work is dedicated to JEHOVAH (‘OJO Mi’)

ACKNOWLEDGEMENT

I must first acknowledge ‘OJO Mi’ (my God) for seeing me through the programme – the journey mercies He accorded me through the horrible and terrible Gombe – Yola road. Lord, I give you all the glory.

Secondly to my humble supervisor, Professor Idama who, through his tight schedules made this work a reality. Prof Idama, God bless you.

I wish to also acknowledge my wife (‘My Dear’) for her patience and endurance together with her prayers anytime am leaving Jos for Yola or Yola - Jos. God be with you and my daughter – Achenyo Tonia Ikani.

To my Twin Brother, Moses Ikani, who always call me when I am on transit from Jos to Yola or Yola to Jos, to know my current position while traveling. Together with my siblings – Joe Ikani, Flo Onuh, Christy Okpanachi, Uncle Nick, Lucy Ikani, Akoji and Teni. Thanks for your calls while on transit and whenever I’m away (Yola).

My acknowledgement cannot be complete without mentioning my good friend, Reuben Noma who initiated the move to do this programme by buying the admission forms. Oga, Oga, thank you. Also to my Landlord, Franklyn Nonso, who accommodated me in his BQ throughout the duration of my programme. My classmate, Salami, thank you for being a true friend. My cousin, Shedrach for his various and untiring assistance while in Yola.

Finally, to the management of FCAH&PT, who gave me the financial support to run this programme. I say a big ‘Thank you’.

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ABSTRACT

This research work has through its limitations tried to represent a graphical and vivid representation of what is sustainable in the Developed world to the Jos police Headquarters Command. This is achieved by a careful analytic study of the system in which the advantages were built upon to minimize or totally eliminate its disadvantages to a great extent. The use of Microsoft Access (Database) has made it easy to include the user friendly environment, using active server page with visual basic script implementation as the programming language has made it dynamic. These features have contributed to the quality, flexibility, efficiency and dynamism of this project work.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The idea of designing a system for police management/activities arose from the difficulties experienced by the Commissioner of Police in accessing the various divisions under him and the difficulty in retrieving and storing information on a declared criminal for future references. A closer look at the advantages of computerizing their activities and the disadvantages as a result of its non-computerization mandated the development of the system. The importance of computerization in this modern age was also a catalyst that boasted the development of the system.

1.2 Proposal for a Computer System

After carrying out a review of the existing system, we have come to a conclusion that a computer based system is necessary for carrying out these activities. Computers will solve the problems of slow production of information. With the introduction of a computer based system, the problems created by the existing system would be minimized to a greater extent.

The proposed system will be cost saving, by way of reducing cost incurred, which would ordinarily have been avoided, improving on access time, making updating much easier and less messy, if at all and introducing security. Some computers exist in the research and statistics department, therefore; little or no expenses would be incurred in the installation of the new system.

1.2 History of the Nigerian Police Force

The Nigerian police force had its origin in Lagos, the then Federal Capital, more than a hundred and thirty years ago. The British Consul charged with the Administration of the Colony of Lagos, complained that he had numerous duties assigned to him amongst which was the maintenance of law and order, and in April 1861, permission was obtained from his principal in London to establish a Consul Guard comprising of 30 men.

Two years later, in 1863, this small body of men became known as: "Hausa Guard". It was further regularized in 1879 by an ordinance creating a Constabulary for the Colony of Lagos. An Inspector General of Police commanded this force recruited mainly from Hausa people and known as the "Hausa Constabulary". The force was military in character, although the men performed some *civic police duties*.

On the 1st of January 1876, the Lagos Police Force was created and armed like the "Hausa Constabulary". A Commissioner of Police who was also the Sheriff, Inspector of Weights and the Officer in charge of the Prison headed its Criminal Investigation Department (CID) at Alagbon close, Ikoyi, Lagos. This was established in 1901, a Fire Brigade was added also. While the development was going on in Lagos and parts of the Yoruba heartland, the area now known as Edo, Delta, Akwa Ibom, Rivers and Cross River States were declared the Oil Rivers Protectorates in 1891 with headquarters at Calabar where an Armed

Constabulary was formed. In 1893, the area was proclaimed the Niger Constabulary, modeled on the Hausa Constabulary. It existed for six (6) years and featured prominently in the British expedition to Benin in 1896.

In the Northern parts of the country, the Royal Niger Company was granted the Royal Charter in 1886 by the British Government set up the Royal Niger Constabulary. This was done in 1888 with Headquarters at Lokoja to project its installations along the banks of the River Niger. The Royal Niger Constabulary played an important role in British campaigns against Bida and Ilorin.

The British government in 1900 following the transfer of administration from the Royal Niger Company proclaimed protectorates of the Northern and Southern Nigerian Police force and the Northern Nigerian Regiment.

In the South, the Lagos Police force and part of Niger Coast Constabulary became the Southern Nigerian Police Force in 1906 while the bulk of the Nigerian Coast Constabulary formed the Southern Nigerian Regiment. (Daniyan, 1968).

1.3 Background Study to the Jos Police Command Headquarters

The Nigerian Police Force, Plateau State command was established in 1967 when the then Head of State, General Yakubu Gowon decided to create more States in the Country. Benue-Plateau State was among the newly created

States, with its Headquarters in Jos. Having the Security of the citizens in mind, a detachment of policemen and women were posted to the new Benue-Plateau State headed by Mr. Isa Saidu Adejo (CP) with a mandate to maintain law and order (Daniyan, 1968).

On the 31st January, 1977, General Murtala Ramat Muhammed splitted the Benue-Plateau State into Benue and Plateau States. The Plateau State Command was headed by Mr. Stephen O. Olumere (CP) to combat crime in the State (Charles, 1980).

The forces' determination to bring crime rate to the barest minimum was strategized, among other things by increasing its manpower. However, crime rate in the state fluctuated from year to year while police personnel increased. So far there are about twenty seven (27) Police Commissioners that have ruled Plateau State including the incumbent, Mr. Idu Yinka Kayode (CP). Table 1: shows crimes committed and the available manpower to fight the crime from 1999 to 2006.

Table 1: Crimes committed and the Increase in Manpower from 1999 to 2006

S/No	Year	Crime	Manpower	Remarks (On Crime)
1	1999	4, 920	3, 242	--
2	2000	4, 512	3, 409	Decrease = 408
3	2001	4, 688	4, 382	Increase = 176
4	2002	3, 570	5, 937	Decrease = 118
5	2003	4, 350	6, 427	Increase = 880
6	2004	4, 960	7, 218	Increase = 610
7	2005	4, 171	8, 122	Decrease = 689
8	2006	3, 754	8, 157	Decrease = 417

Source: The Jos Police Headquarters Annual Report Booklet

1.4 Problem Statement

One of the amazing things about changes in life is that as we continue to face new challenges, an obvious fact still remains that the older challenges will still remain. Propounding the fact that as researchers and scientist aim at new goals and discoveries, the former one does not change.

Thus, one cannot separate our dynamic society from the social ills such as robbery, theft, money laundering and other inhuman act that can lead to loss of lives and destruction of properties. That is why in the strata of organization of the society, we have agents such as the Police, the Army, Air force and Navy with different jurisdictions. What makes criminals rule over the affairs of the nation is t lack of proper record system. Access network to knowing whether or not a person or some group of persons have a clean and clear public image may

be available. This study is aimed at developing a system to enable the Commissioner of Police to have access to the records of the various divisions. It will also provide a means of checking certain criminal records from the available database so that he could get necessary information on crime and manpower requirements.

The concept of designing a system for Police Management activities arose from the difficulties experienced by the Commissioner of Police to easily retrieve and store information on a declared criminal for future references. A close look at the advantages of computerizing their activities and the disadvantages as a result of its non – computerization mandated the development of the system. The importance of computerization in this modern age was also a catalyst that boosted the development of the system.

1.5 Aim and Objectives of Study

This research is aimed at developing an information system for the office of the Commissioner of Police, Plateau State, with the view to providing the information necessary for:

i. Controlling the crime rate within the state and

ii. Meet up with some of the other challenges in the command.

The objectives of the study are:

I. To identify the weaknesses associated the existing information system

II. To improve on the existing information system

III. To develop database management system for the attainment of the information system.

1.6 Scope and Limitations

This study is limited to development of Management Information System for Jos Police Command Headquarters (The Crime Section) only.

CHAPTER TWO

LITERATURE REVIEW

2.1.0 Concept of Management Information System (MIS)

The concept of MIS is best explained by the understanding of its components.

2.1.1 Systems

A system can be simply defined as a group of interrelated or interacting elements forming a unified whole (Laudon and Laudon, 2003).

A system is a group of interrelated components working together toward a common goal by accepting inputs and producing outputs in an organized transformation process, (O' Brien, 1994). Such a system (sometimes called a "dynamic system") has three basic interacting components or functions:

1) **Input** involves capturing and assembling elements that enter the system to be processed. For example: raw materials, energy, data, and human effort must be secured and organized for processing.
2) **Processing** involves transformation process that converts input into output. Examples are a manufacturing process or mathematical calculations.

3) **Output** involves transferring elements that have been produced by a transformation process to their ultimate destination. For example, finished products, human services, and management information must be transmitted to their human users.

A system is a combination or arrangement of parts to form an integrated whole. A system includes an orderly arrangement according to some common principles or rules. A system is a plan or method of doing something.

We have open and closed systems. Open systems are those that have interaction with their environments (social system) while closed system don't have interaction with their environment, they are physical system. The study of system is not new. The Egyptian architects who built the pyramid relied on a system of measurements for the construction of the pyramids. Phoenician astronomers studied the system of the stars and predicted future star positions.

A system is a scientific method of inquiry that involves observation, the formulation of an idea, the testing of that idea, and the application of the results. The scientific method of problem solving is systems analysis in its broadest sense. Data are facts and figures. However, data have no value until they are compiled into a system and can provide information for decision making.

Information is what is used in the act of informing or the state of being informed. Information includes knowledge acquired by some means. Information is data that have been shaped into a form that is meaningful and useful to human beings (Laudon and Laudon, 2003).

Management is usually defined as planning, organizing, directing, and controlling the business operation, ((Henri, 1967). This definition implies what a manager does, but it is probably more appropriate to define what management is rather than what management does. Management is the process of allocating an organization's inputs, including human and economic resources, by planning, organizing, directing, and controlling for the purpose of producing goods and services desired by the customers so that organizational objectives are accomplished. (Nwachukwu, 1988).

2.1.2 Information Systems (I.S)

In general sense, information systems refer to a system of people, data, records and activities that process the data in an organization, and it includes the organization's manual and automated processes. In a narrow sense, information system (or computer – based information systems) refer to the specific application software that is used to store data records in a computer system and automates some of the information – processing activities of the organization (Galliers, 2006).

Information systems research is generally concerned with the study of the effects of information systems on the behaviour of individuals, groups, and organizations (Ciborra, 2002). Often information systems researchers explore behavioural issues in much more depth than practitioners would expect them to do, which may render information systems research results difficult to understand (Kock, *et al*., 2002).

An information system uses the resources of people (end users), hardware (Machines/Media), and software (Programs and procedures) to perform input, processing, output, storage, and control activities that convert data resources into information products. (O' Brien, 1999)

Information systems play three fundament roles in an organization

- Support organizational operations
- Support decision making by its managers
- Support of organizational strategies for competitive advantage.

We can classify information systems based on operations and management, this is illustrated in figure 1.

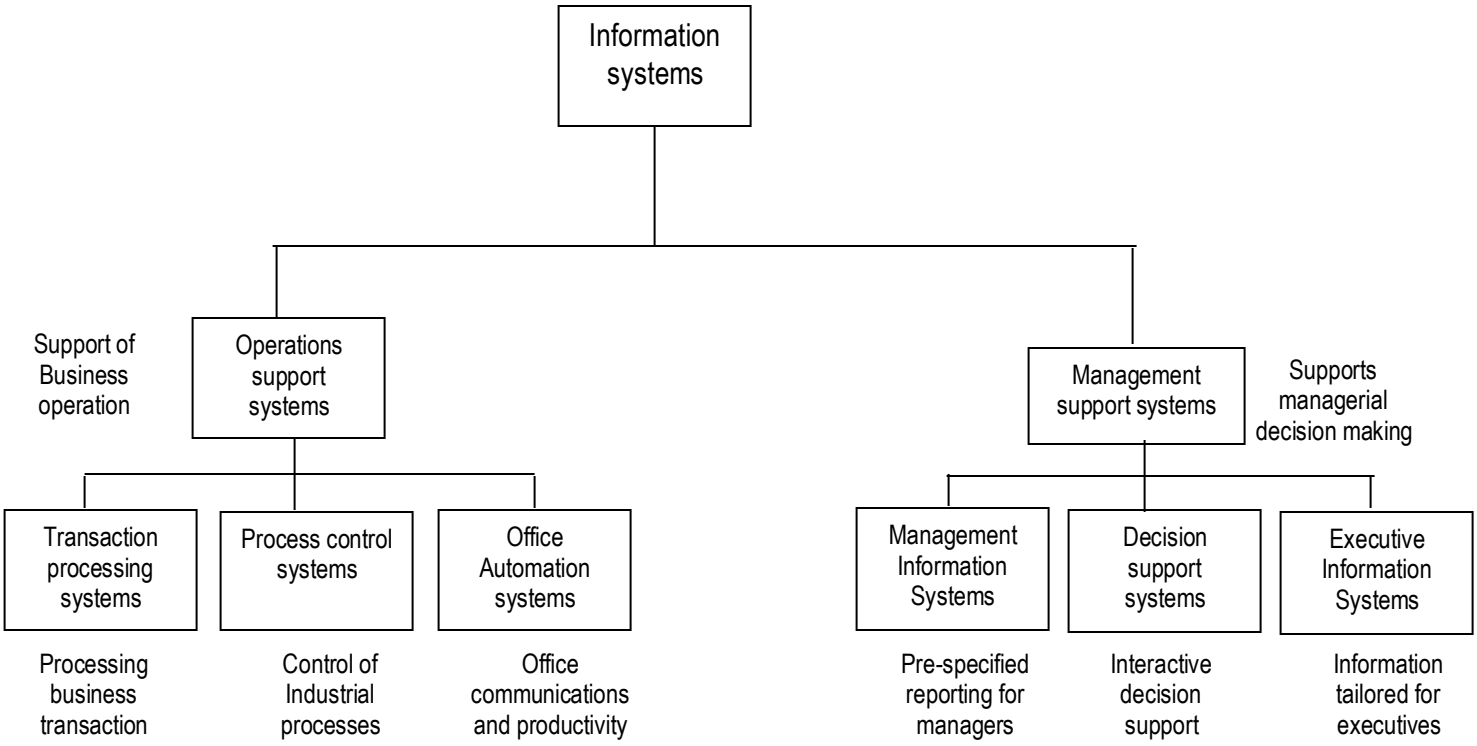


Figure 1: Classification of Information Systems
Source: O' Brien, (1999)

2.1.3 Transaction Processing Systems (T.P.S)

It records and processes data resulting from business transaction. Typical examples are sales, purchases and inventory changes. The results of such processing are used to update customer, inventory, and other organizational database. They process transactions in two basic ways: Batch processing (periodically) and Real time processing (online). (O' Brien, 1999).

2.1.4 Process Control Systems (PCS)

They make routine decisions that control operational processes. Examples include automatic inventory reorder decisions and production control decisions. (O' Brien, 1999).

2.1.5 Office Automation Systems (OAS)

OAS collect, process, store, and transmit information in the form of electronic office communication. These automated systems rely on text processing, telecommunications, and other information systems technologies to enhance office communications and productivity. (O' Brien, 1999).

2.1.6 MANAGEMENT INFORMATION SYSTEMS (MIS)

They are the most common form of management support system. They provide managerial end users with information products that support much of their day-to-day decision needs. MIS retrieve information about internal operations from database that have been updated by transaction processing systems. They also obtain data about the business environment from external sources. (O' Brien, 1999).

2.1.7 Decision Support Systems (DSS)

They are interactive, computer-based information systems that use decision models and specialized databases to assist decision making process of managerial end users. DSS provide information on an ad hoc (as needed) basis. They provide managers with analytical modeling, data retrieval and information presentation capabilities. (O' Brien, 1999).

2.1.8 Executive Information Systems (ESS)

They are tailored to the strategic information needs of top and middle level management. Top executives get the information they need from letters, memos, periodicals, and reports produced manually as well as by computer systems. The Executive Information System provide top and middle management with immediate and easy access to selective information about key factors that are critical to accomplishing a firm's strategic objective. (O' Brien, 1999).

2.1.9 Management Information Systems (MIS)

Background

Management information systems do not have to be computerized, but with today's large, multinational corporations, computerization is a must for a business to be successful, and therefore MIS is computer-based. However, MIS began with simple manual systems such as customer databases on index cards. As early as 1642, the French Mathematician and philosopher Blaise Pascal invented the first mechanical adding machine so that figures could be added to provide information. Almost two hundred years later, Charles Babbage, a Professor of Mathematics of Cambridge University in England, wanted to make a machine that would compute mathematical tables. He attempted to build a computing machine during the 1880s. He failed because his ideas were beyond his technical capabilities; not because the idea was flawed. Babbage is often

called the father of the computer. With the advent of the computer, MIS became automated.

In the late 1890s, because of the efforts of Herman Hollerith, who created a punch-card system to tabulate the data for the 1890 census in the United State of America it was possible to begin to provide data-processing equipment. The punch-card developed by Hollerith was later used as a basis to form a company to provide data-processing equipment. This company evolved into International Business Machines (IBM). Mainframe Computers were used for MIS from the 1940s, 50s, 60s and up until the 1970s. In the 1970s, personal computers (PC) were first built by hobbyists. Then Apple Computer developed one of the first practical personal computers. In the early 1980s, IBM developed its PC, and since then, the personal computer industry has mushroomed. Almost every MIS today revolves around some kind of computer hardware and software.

2.2.0 Definitions of MIS

MIS is a subset of the overall internal control of a business covering the application of people, documents, technologies, and procedures to solving business problems. MIS are distinct from information systems in that they are used to analyze other information system applied in operational activities in the organization (O' Brien, 1999).

MIS is a planned system of collecting, processing, storing and disseminating data in the form of information needed to carry out the functions of management. (Kotler, *et al*, 2006).

According to Kotler, *et al*, (2006) *"A management information system consists of people, equipment, and procedures to gather, sort, analyze, evaluate, and distribute needed, timely, and accurate information to management decision-makers"*.

The terms MIS and information systems are often confused. Information systems include systems that are not intended for decision making. MIS is sometimes referred to, in a restrictive sense, as Information Technology Management. That area of study should not be confused with computer science. Information Technology Service Management is a practitioner – focused discipline. (Allens, 2001).

Research in the information field examines more than the technology system or just the social system, or even the two side by side; in addition, it investigates the phenomena that emerge when the two interact. (Allens, 2001).

Management information systems are those systems that allow managers to make decisions for the successful operation of businesses. MIS consist of computer resources, people, procedures used in the modern business enterprise. MIS refers to the organization that develops and maintains most or all of the

computer systems in the enterprise so that managers can make decisions. The goal of the MIS is to deliver information systems to the various levels of corporate managers. MIS personnel must be technically qualified to work with computer hardware, software, and computer information systems. MIS managers, once they have risen through their technical ranks in their organizations to become managers, must remember that they are no longer doing the technical work. They must crossover from being technicians to become managers. Their job changes from being technicians to being systems managers-one who manage other people's technical work.

MIS managers are in charge of the system development operations for their organizations. System development involves four phases:

Phase I – System Planning

The systems team must investigate the initial problem by determining what the problem is and developing a feasibility study for management to review.

Phase II – Identifies the Requirements for the Systems.

This includes:

The system analysis, the user requirements, necessary hardware and software, and a conceptional design for the system. Top management then reviews the systems analysis and design.

Phase III – Involves the Development of the Systems. That is, developing technical support and technical specifications; reviewing user's procedures control, designing the system, testing the system, and providing user training for the system. At this time, management again reviews and decides on whether to implement the system.

Phase IV - Implementation of the System. The new system is converted from the old system, and the new system is implemented and then refined. There must be on-going maintenance and re-evaluation of the system to see if it continues to meet the needs of the business.

2.2.1 Online Systems

Online was borne out of man's desire to improve the most friendly way to run a business. It is a powerful, fast, and efficient communication tool and medium. It permits freedom to live and work where you like, access to information made easy, global presence 24 hours etc. This is made possible by the Internet.

Online was a revolutionary computer collaboration system designed by Douglas Engelbest and some researchers at the Augmentation Research Centre (AR) during 1960s. He was the first to employ the practical use of hypertext links, but its development was more or less finished in late 1968. (Shirdon, 2006).

Online is a general term used for describing when one computer is interacting directly and simultaneously with another remote computer as is done on the Internet.

Records constitute “Corporate Memory” of an organization’s daily business actions or events and as such, constitute the evidence that later can be reviewed, analyzed or used to document the specifics of those actions and events.

2.2.2 Computers in Communication

Computers, when properly instructed, can go a long way in decision making with regards to space, capacity, environmental conditions and circumstances. This was demonstrated in the software development by Amene, (2001), for the allocation of stores and stalls in the Jos Main Market. The software was a relieve in the trouble of making decisions as well as reducing the amount of time, energy and money spent on the exercise compared to when the manual or traditional approach was used. She used PASCAL in developing this software.

Amazon is one of the most popular computer online shops in the world today. Its website and a systematic online request software was developed to meet the demand of her customers. The company has long been faced with problems such as not meeting up to the supply of goods to customers, loss of goods during supply and customers not knowing about them. Those problems

led to the analytic study of the problem and a profound solution was developed to reduce the problem.

Amazon developed a software for commercial purposes where companies and organizations promote or advertise their product to other web users. With these, a lot of their problems were drastically reduced and solved. Companies can now place their goods online, payment are done with credit cards and notification of payment done while goods are supplied to their destinations.

Also, the increased attention given to the design of software for online storage is yet another innovation worth discussing. These software have greatly influenced the development of many application software, electronic archive developed for the Nigerian film corporation is one among these applications, (Johnson, 2001). It uses a general purpose programming language called PASCAL. This programme has put to rest the extra work involved in data storage/retrieval and has eliminated the incessant intrusion and inversion of privacy as well as reducing the colossal amount of money expended in this operation.

In order to ensure the civil trust enshrined in the constitution of Nigeria and to meet up with the global challenge in all spheres of human endeavour, it is as well necessary to uplift the digitalization goal no matter how small it may be in the computerization of most of the police services.

This in turn calls for selecting deliberate plan of action to ensure that the effectiveness and efficiency of the police service is properly maximized and of course, without compromise of quality and loss of standard.

Many individuals and organizations have recognized this need and have subsume this to control and accessibility to build an accelerated growth of its commercial and development potentials of the high speed and interactive networking.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 The Data for this Study

According to the Oxford Advanced Learner's Dictionary, data are facts or information examined, and used to find out things with the aim of making decisions. Nwaburki (1996) expresses data as a collection of facts/figures as well as pieces of information and details, which together make up the raw materials of the group of objects for generalization about the population. He argued that the data so collected (for any study), are either qualitative (stressing extensities or attributes) or quantitative (expressing amount, weight or height, etc.).

Data collecting instruments refers to the methods adopted in gathering data. The instruments used in this research include:

(a) **Interview:-** Oral interview was conducted on some senior officers of the command whose function is relevant to this study and some junior officers.

(b) **Observation:-** Observations were carried out by carefully studying operations at the command headquarters.

3.2 The Crime Handling Process

When a person is caught in an offence, he is taken to the Criminal Investigation Department (CID) for interrogation (questioning). This department is headed by an Assistant Commissioner of Police (ACP) and he is responsible to the Commissioner of Police for prevention and detection of crime. Some of the offences that are handled by this department include:-

(a) Offences against persons such as: homicide, suicide, attempted suicide, previous harm/wounding, slave dealing, rape, child stealing/kidnapping, etc.

(b) Offences against property such as:- theft, armed robbery, extortion, burglary, cheating, receiving of stolen property, unlawful possession etc. other offences re-forgery of currency notes, gambling, bribery and corruption etc.

(c) Other departments in the Jos Command that help in criminal investigation include:-

(i). 'A' Department:- this has the following sections:-

(a) Transport/workshop section

(b) Command Provost Section

(c) Band section

(d) Police Public Relations

(e) Supernumerary and special constabulary

(f) Police sports

(g) Medical service

(ii) **'B' Department**:- which is known as the Operations Department. They have the following section:-

(a) Transportation/Workshop

(b) Command Signal Section

(c) Mounted Troop Section

(d) Veterinary Section

(e) Dog section

(f) Armament section (servicing and services of all arms and ammunition purchase of the state command).

(g) Police Command squad

(h) Police mobile force (responsible for quelling serious disturbances, which could not be contained by the conventional police unit).

(iii). **'C' Department:-** Known as the Works Department. The section undertakes maintenance of police quarters and buildings in the command. Sections under this department are:-

(a) Carpentry Section

(b) Store Section

(c) Tailoring Section

(d) Pay and Nass (Mechanized Salary Section)

(iv). **'E' Department:-** Known as the Training Department. This department is responsible for the research, planning and the management of information and carries out periodic inspection of the divisional headquarters. It collects returns of various incidents from all divisions and other information/departments and renders same to the Inspection-General of Police, 'F' department force headquarters for necessary action.

3.3 Specifications of the System

Some of the basic requirements considered in the analysis of the Police Management Information System include; a detailed understanding of the various divisions under the Jos Police Headquarters and the processes taken when someone is being arrested. This function is carried out by the Command's Criminal Investigation Department (CID) known as the 'O' Department. This unit is headed by the Assistant Commissioner of Police (CACP). All Divisional Crime Officers in the command work closely with the department to enhance its effectiveness in curbing crimes. Some of the basic requirement also include; identifying data used and information produced, and the way in which data is held in the system.

3.4 Working with Databases (MS Access)

Simply put, a database is a collection of related records stored in tables. These tables are made up of rows which represent individual records and columns which represent fields of data. There are several database management applications that allow users to take advantage of their many features in order to store and manipulate their data. For the purpose of this project research work, the Microsoft Access Database Management Software (DBMS) was used.

MS Access is made up of seven database object which access data in different ways. These database objects include:

Tables, Queries, Forms, Reports, Data Access Pages, Macros, and Modules. Again, for the purpose of this research work, only the database tables were used.

3.5 Database Tables

Tables are objects or structures in MS Access where the data is physically stored. They are made up of rows and columns which collectively store the records from the database. The other objects in the database are used to access and manipulate the data stored in the tables.

For the projects web application (Police Management Software), four tables have been created to store data for the needed categories of information for the application. The tables are – Login, Offenders, Operations, and Staff. The details of the contents of these tables are discussed in section 3.12

3.6 Data Types

This refers to the kind of value that will be stored in the fields (columns) which make up the tables. Basically, there are nine data types in MS Access.

These include the following;

(a) **Text:** This is the default data type; it allows only combination of letters and numbers up to a maximum of 255 characters per field record.

(b) **Memo:** This is a text type that stores up to 64,000 characters.

(c) **Numbers:** Any number can be stored

(d) **Data/Time:** Stores dates, time, or a combination of both.

(e) **Currency:** Monetary values can be set up to automatically include the Naira sign and correct decimal and comma positions.

(f) **Auto number:** When a new record is created, MS Access automatically assigns a unique integer to the record in this field. Since every record in a table must include at least one field that distinguishes it from all others, this is a useful data type to use if the existing data will not produce such values.

(g) **Yes/No:** This option is used for T/F. Yes/No, On/Off, M/F, or other values that must be only one option.

(h) **OLE Object:** An OLE (Object Linking Embedding) object is a sound, picture, or the object created with another application. This data type is used to link to the object in the database.

(i) **Hyperlink:** This type links to another location in the database.

3.7 Primary Key

Every record in a database must have a primary key that differentiates it from every other record in the table. This primary key is a field that exists in every record and must be unique for each individual record.

CHAPTER FOUR

SYSTEM DESIGN

4.1 Benefits of the Proposed Computer Based System

The benefits of the proposed system shall be in the following areas:

4.1.1 The cost of Production

The police organization does not need to extensively train personnel or employ personnel capable of operating the new computer based information system since some members of the staff of the department are computer literate. Also, less human participation would be required which will reduce cost expended by paying for overtime in most cases.

4.1.2 Proper Record Keeping

It is widely known that files put on paper can be misplaced easily and can get missing completely. Certain offenders' records have a way of disappearing mysteriously, with the computers backup copies will be available such that disappearance of files will cease. It is quite easy to access criminal records or retrieve the file of the offenders without wasting time.

4.1.3 Time of Retrieving Information

When quick information is required such as checking the number of offenders/criminals in a week and those that were found guilty, it is faster to get the information from the computer rather than going to check with the various criminals as is presently done. This is due to the fact that input to the computer gives prompt information and minimizes the time lapses between an event and its appearance in a meaningful form. Computer based information system can be retrieved much faster.

4.1.4 Elimination of Updating Problems

Situations where changes need to be made in the criminals' files, it usually leads to a lot of confusion and problems especially once the changes have been made, then updating becomes a task and the files become unnecessarily voluminous and untidy. But with the computer, it is much easier to make changes. All that needs to be done on the computer is to call for the criminal/staff files and whatever needs to be unpacked is done without stress or strain.

4.2 The System Life Cycle

The process of developing a system from existing facts about the prospective system happens in a series of stages. These stages are collectively known as the system life cycle. The various stages of the system development life cycle include project initiation, feasibility study, analysis, specification, technical design, construction, and implementation.

4.3 Technical Design

The analysis of a system may lead to a number of alternative positive designs. Different combination of manual and computerized elements may be considered once an alternative have been selected. The purpose of this decision is to work from the requirement specification to produce a system specification.

This research has analyzed the problems that the Jos Police Headquarters Command faces as a result of manually producing and maintaining its records. To solve these problems, this research worked at having a standard program written to control the process of producing and maintaining the records. Flowcharts and data flow diagrams were necessary and are used to show the steps involved in the diagram.

4.4 Information Needs: Users Requirements

A design must match relevant user requirements. Relevant requirements are based on the proposed level of information generating efficiency. The seminaries of the user requirements for the online police management system are as follows:-

i. The system must be easy to use. A graphical user interface might be most appropriate.

ii. The system must provide security measures by using passwords.

iii. The system must be fully integrated thus eliminating redundant data entry and redundant updates. It must ensure database integrity.

iv. Users must be able to access the system concurrently from several workstations

v. The system processes must create, update and locate the criminal and administrative records.

vi. The system must be able to search the data-base for the records needed.

4.5 Feasibility Study

The purpose of this study is to investigate the project in a sufficient depth so as to provide information that either justifies the development of the system or to show why the project should not be confirmed. Data for conducting the investigation were collected through the review of documents such as the various reports brought weekly from the various divisions under the Jos Police Headquarters for proper investigations and conclusion.

4.6 Analysis and Specification of the System

Analysis

The importance of analyzing the detailed requirements of an intended system cannot be overemphasized. Some of the requirements considered in the analysis of the police management system include; a detailed understanding of the various divisions under the Jos Police Headquarters and the process taken when someone is being arrested, which is being carried out by the Command Criminal Investigation Department (CID) known as the 'D' department; headed by the ASP.

4.7 Specification of the System

some of the basic requirement considered in the analysis of the Police management Information System include; a detailed understanding of the various divisions under the Jos Police Headquarters and the processes taken when someone is being arrested. This function is carried out by the Command's Criminal Investigation Department (CID) known as the 'O' Department. This unit is headed by the Assistant Commissioner of Police (CACP). All Divisional Crime Officers in the command work closely with the department to enhance its effectiveness in curbing crimes. Some of the basic requirement also include; identifying data used and information produced, and the way in which data is held in the system.

4.7.1 Database development

It should be stated that the software which accompanies the project has five main components, these include the front end, which is built up with Hypertext Make-up Language (HTML) and ASP, a web server, an application server (it should be noted that Microsoft IIS here doubles as our web and application servers), a database, and the database drivers and parameters. In this section, the main concern is the database and the components that make it work.

The database that has been used for the software is Microsoft Access. Herein, the tables that physically store the data are found along side the database driver which is a software that provides a communication link between the front end and the database itself. There are five tables found in the database and these

include: the Login, Offenders, Staff, Detentions, and Crimes. Detailed description of each of these is seen in section 4.18.

4.7.2 Connecting the Interface to the Database

The interface for the police management web application is the part which the end-user of the application sees and uses to perform different operations when the application is launched. It should be noted at this point that there are other mechanisms that must synergistically work together to produce the desired results in dynamic pages such as creating record sets and placing data from the database into the record set.

The interface was created using a combination of HTML and ASP (Active Server Pages). ASP provides statements and that can be used to access data from the back end (Database). However, a database connection must be created before this can be achieved. Having stated this, it must be borne in mind that a web server which serves pages is requested by the browser, and an application server which handles any server-side script that are contained in the application must be installed and configured properly. From the police management application, Microsoft IIS (Internet Information Service) doubles as both the web and application servers.

4.7.3 Database Drivers

A database driver is a software that interprets between a web application and a database. It converts the proprietary format of a database into an understandable format for the web application. This allows the application access and manipulates data in the database which would otherwise have been impossible.

The PMWA connects to the database (MS Access) using an open database connectivity (ODBC) driver which serves as the database driver. Strictly speaking, this ODBC driver is called ‘Microsoft Access driver’.

On the other hand, a DSN is a single word identifier, meaning Data Source Name, which serves as a set of database connection parameters. The parameters include the server name, the path to the database or the database name, the ODBC driver to use, and the user name and password if any. To create a DSN, an ODBC driver for the database must be installed on the computer running the application server.

Having put all the necessary configurations and software in place, the application now performs its tasks accordingly by allowing the web server serve all the interface pages to the browser as requested, and relaying any request with a server-side script to the application server for processing. The database driver and data source names finally provide access to the information in the database and vice-versa.

4.7.4 Macromedia Dream Weaver and Microsoft IIS

Macromedia dream weaver is a professional HTML editor for designing, coding and developing websites, web pages and web applications. It is with this tool that the pages and database connections of the PMWA were created.

There are several resources that can be used to learn how to use Dream Weaver both in books and on the internet. However, this research only provides brief descriptions of some of its features.

(a) **The Insert Bar:** Contains buttons for inserting various types of objects, such as image, tables and layer into a document. Each object is a piece of HTML code that allows you to set various attributes as you insert it. For example, you can insert an image by clicking on the image icon in the insert bar.

(b) **The Document Toolbar:** Contains buttons and pop up menus that provide different views of the document window such as design view and code view, various viewing options and some common operations such as reviewing in a browser.

(c) The document window displays the current document as you create and edit it.

(d) **The property Inspection**: It lets users view and change a variety of properties for the selected object or text. Each kind of object has different properties.

(e) The site panel allows users to manage the files and folders that make up an application.

4.7.5 Record Sets

As stated earlier, web pages cannot directly access the data stored in a database. Instead, they interact with a record set. A record set is a subset of the information, or records, extracted from the database. This subset of information is extracted using a database query. A query is a search statement designed to find and extract specific information from a database. Dream weaver uses the Structured Query Language (SQL) to build queries.

4.7.6 Microsoft Internet Information Service (IIS)

Web services allow applications to communicate and share information across the internet, regardless of operating system or programming language. Examples of web services and information and functionality they provide and aid the following:

- User authentication and validation
- Credit and validation

- Financial markets services that ration stock prices associated with specified ticker symbols.
- Purchasing services that allow users to order and buy products online.

By providing functionality as a service that a web page connects to and uses as needed, web services give developers and service providers quoted flexibility in designing and developing powerful, distributed applications.

4.8 The Finished Application

The police management web application is a fully functional software created with several technologies which mainly automates the process involved in the administrative operations of the police force. These operations include:
Adding records for offenders, staff and operational activities

- Deleting records
- Updating records
- Searching for records
- Determining offenders, staff and operation status etc.

4.8.1 How Data is Stored

In the manual system, data is stored on papers (worksheet) which are held in files and kept for future references. In the new system, data is stored in a database which manages how records are added, updated and deleted from the database.

4.8.2 **Specification of the system**

This determines the detailed definition of the system and it consists of:-

(i) The functional requirement

(ii) The data to be stored

(iii) The format of input and output

4.8.3 The Functional Requirements of the System

The online police management system which is a web based application, requires or depends on some certain factors in order to function effectively and efficiently. These factors include:

(a) The system needs a well designed and managed database to hold the enormous data which is needed for the running of the system as the back end. The database management system to be used must be one which is optimized for speed so as to enable quick retrieval of data from the system when needed by the Commissioner of Police or any of the users.

(b) A web server is also needed, which is the software that serves web pages in response to requests from web browsers to hold the database because of the online operation of the system.

(c) A web application is a website that contains pages stored on a web server with partly or entirely undetermined content

(d) An application server: Which reads the code on the page, finishes the page according to the information in the code, then removes the code from the page. The result gotten here is a static page which is HTML.

(e) Dynamic page which instructs the application server to extract data from a database and inserts it into the page's HTML

(f) A network of computers each with a web browser is needed.

(g) A scripting language (program) which will run on the web server holding the database is needed to serve as an intermediary between the database and the web browser on all the computers on the network

(h) A database Driver: is a software that acts as an interpreter between a web application and a database.

(i) The computers on the network will require an operating system.

4.8.4 **Data to be Stored**

The data needed by the system falls into two broad categories. These include;

(a) Data which holds information about all the criminals, the staff and the offenders under the Jos Police Command Headquarters

(b) Data which holds the information about the entire administrative users of the system. Items of data under this category include:

  (i) Username

  (ii) Passwords.

4.8.5 Format of Input and Output

For the purpose of this research, the data to be inputted are the records of criminals held by the Jos Police Command Headquarters and the records of the administrative users of the system. These records will be keyed into the system through the keyboard. The forms of the system will be used to accept the data which will subsequently be transferred to the database. The forms will also be used to update and remove records from the database.

The output of this system will be displayed on the web pages of the browsers of the user systems.

4.8.6 Information Needs: Users Requirements

A design must match relevant user requirements. Relevant requirements are based on the proposed level of information generating efficiency. The seminaries of the user requirements for the online police management system are as follows:-

i. The system must be easy to use. A graphical user interface might be most appropriate.
ii. The system must provide security measures by using passwords.
iii. The system must be fully integrated thus eliminating redundant data entry and redundant updates. It must ensure database integrity.
iv. Users must be able to access the system concurrently from several workstations.
v. The system processes must create, update and locate the criminal and administrative records.

vi. Search the data base for the records needed.

4.9 System Flowchart Design and Development

A program flowchart is defined in the NCR, EPD content (1992) as diagrammatical representation of the step-by-step sequence for solving a problem. In particular, it consists of a number of blocks, each representing a single conceptual step in the process. These blocks are connected by lines to show the sequence in which they are to be performed.

From the analysis and specification of the system, the design of the system flowchart is as shown in the Appendix. Flowcharts have the following advantages:-

i. Flowcharts are fairly easily produced

ii. Flowcharts are freely learned, since flowcharts have only a few components parts.

iii. It can be used to describe unambiguously the way that computers handle the process data.

iv. Because it is symbolic or graphical, it can be prepared at almost any level of detail and can be scanned quickly.

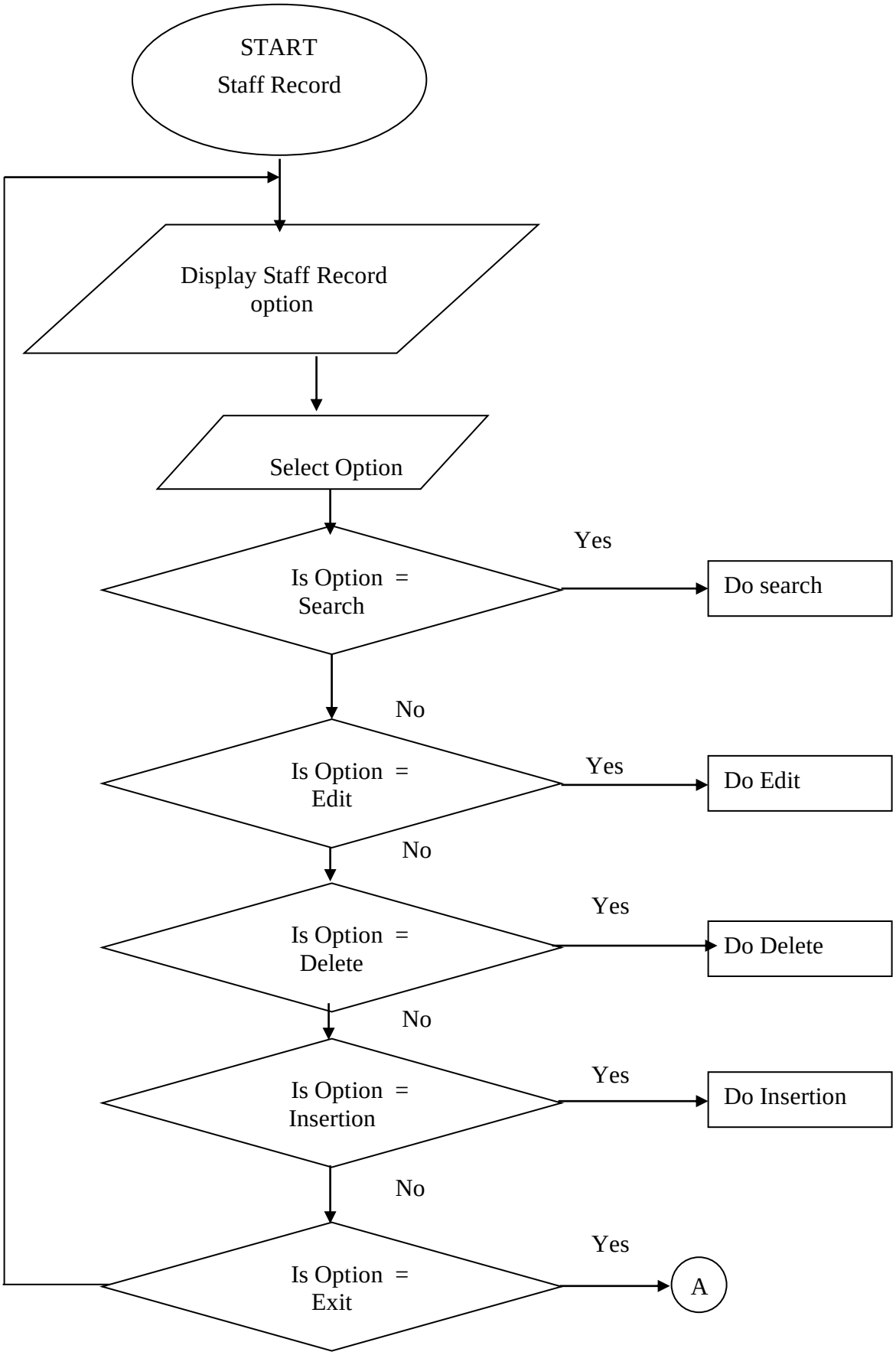


FIGURE2: FLOW CHART FOR STAFF

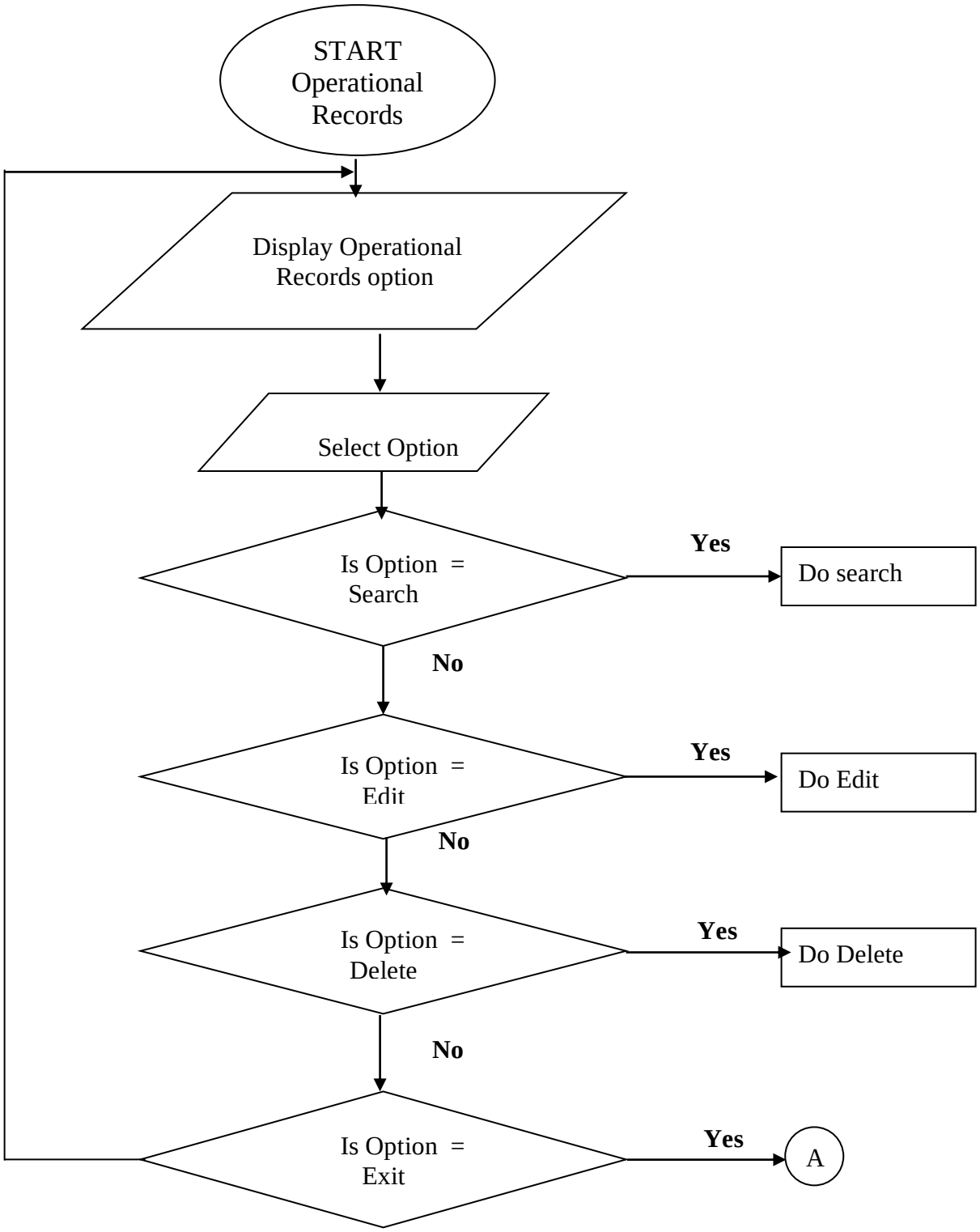


FIGURE 3: FLOW CHART FOR OPERATIONS

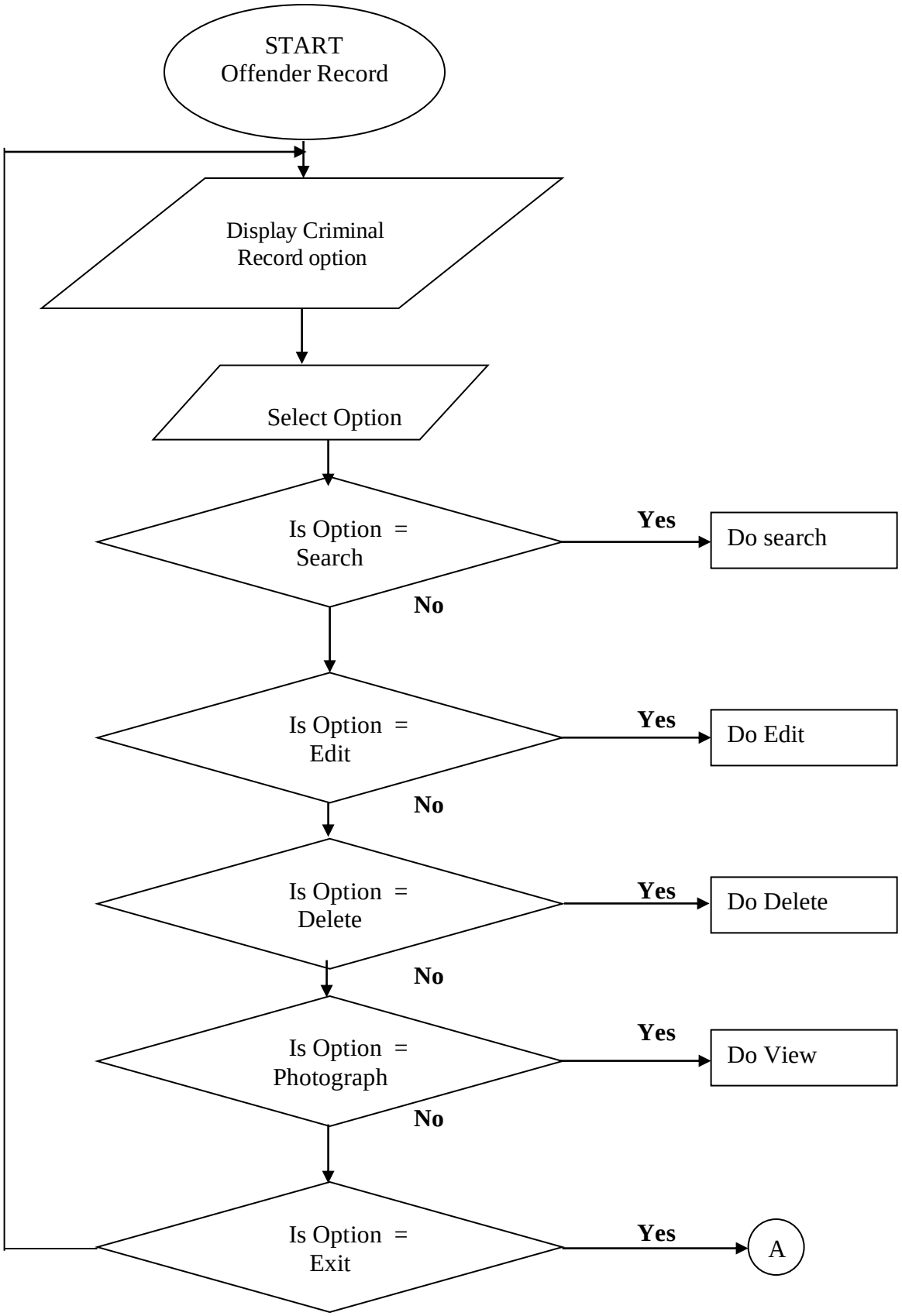


FIGURE 4: FLOW CHART FOR OFFENDER

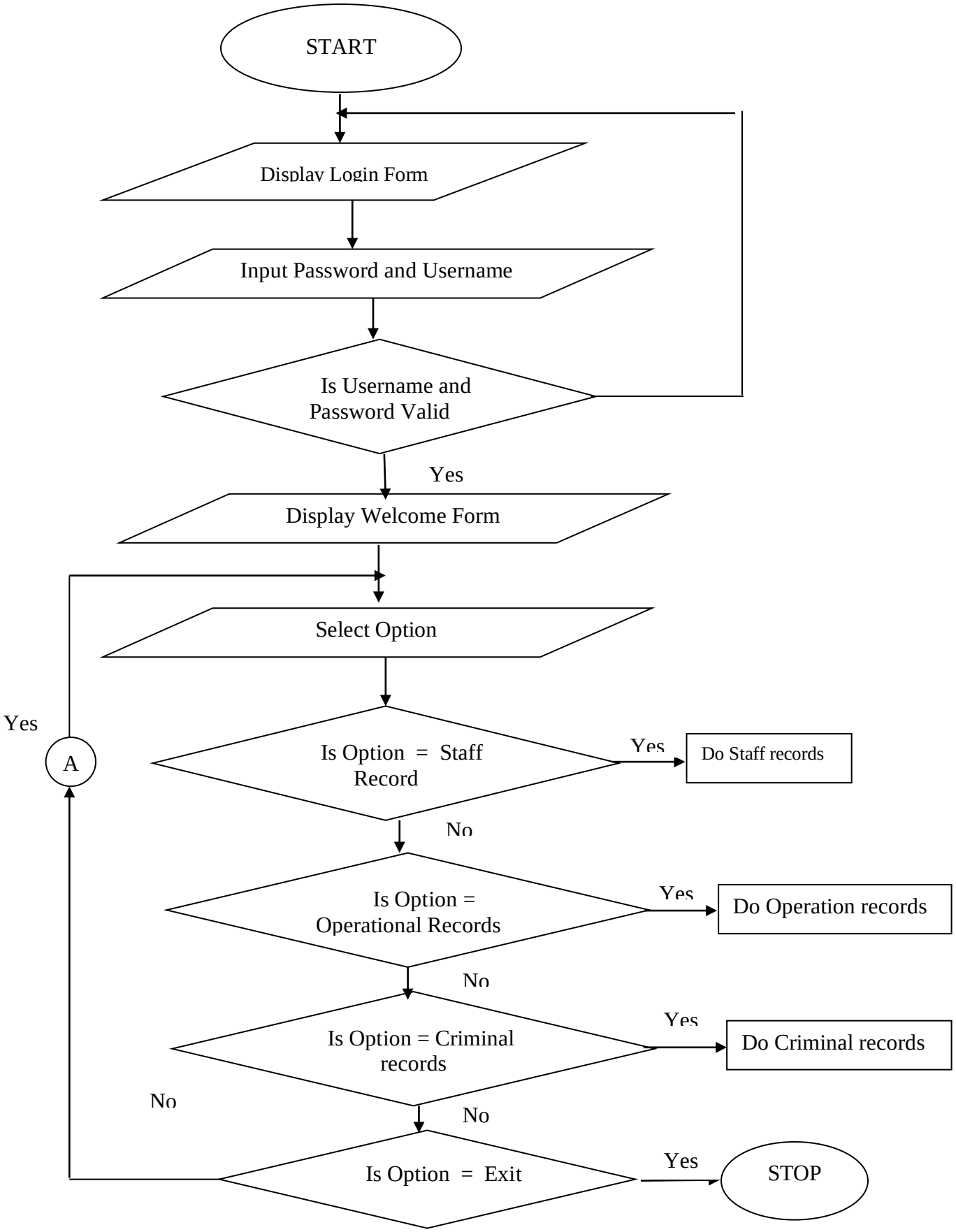


FIGURE 5: FLOW CHART FOR THE PROGRAM

4.10 Construction of the System

System construction involves the building and testing of the system specified by the technical design. Activities carried out include: database creation, database loading and writing of the system procedures.

All the tables defined during the technical phase are created during this phase. The database for the Jos Police Command Headquarters system has been created using MS access Database Management System.

4.11 Database Loading

The newly created database contains the table structure. These table structures can be filled by entering (typing) the data one table at a time or by copying the data from existing databases. If the new table structure and formats are incompatible with those used by the original DBMS, the copy procedure requires the use of special loading or conversion utilities.

4.12 System Procedures

The system procedures describe the steps required to manage, access and maintain the database system. The procedures for the Jos Police Management online system were written using the scripts. These procedures were written to ensure the following:

1. Test and evaluate the database
2. Ensure database security and integrity
3. Access and use the database system

4.13 Acquiring Hardware

Their are a great variety of hardware configuration that might be part of a computer information system. Depending on the types of tasks to be performed by the system and the types of users it will serve, a number of different kinds of computers can be used. Due to high processing operation of the Jos Police Headquarters online system, a powerful microcomputer with high processing speed is needed as the server along side with other client computers which will be accessed by the users.

4.14 Testing the New System

Testing a new system is a crucial implementation activity that requires careful planning on the part of the designer. Testing involves the running of the anticipated processing under conditions that will be encountered so as to find logical errors.

Numerous checks were conducted to monitor the program and dataflow on the system. On completion of the new system sample, data were used for testing to ensure that it meet all expectations and requirements.

4.15 Setting up a Production Environment

The environment in which the system will be used has some requirements. These requirements include.

(a) A network of computers (WAN) each with a web browser. WAN, these are country wide and World Wide Networks. Among other kinds of channels they use microwave relays and satellite to reach users over long distances. One of the most widely used WAN is the internet which is available to nearly everyone who has a microcomputer and a means to connect to it.

(b) A web server is needed to hold the database because of the online operation of the system.

(c) A scripting language (VB) which will run on the web server is needed to serve as an intermediary between the database and the web browsers on all the computers on the network.

(d) Application server: Helps in processing request to make the software dynamic

4.16 Training End-users and Operation Team

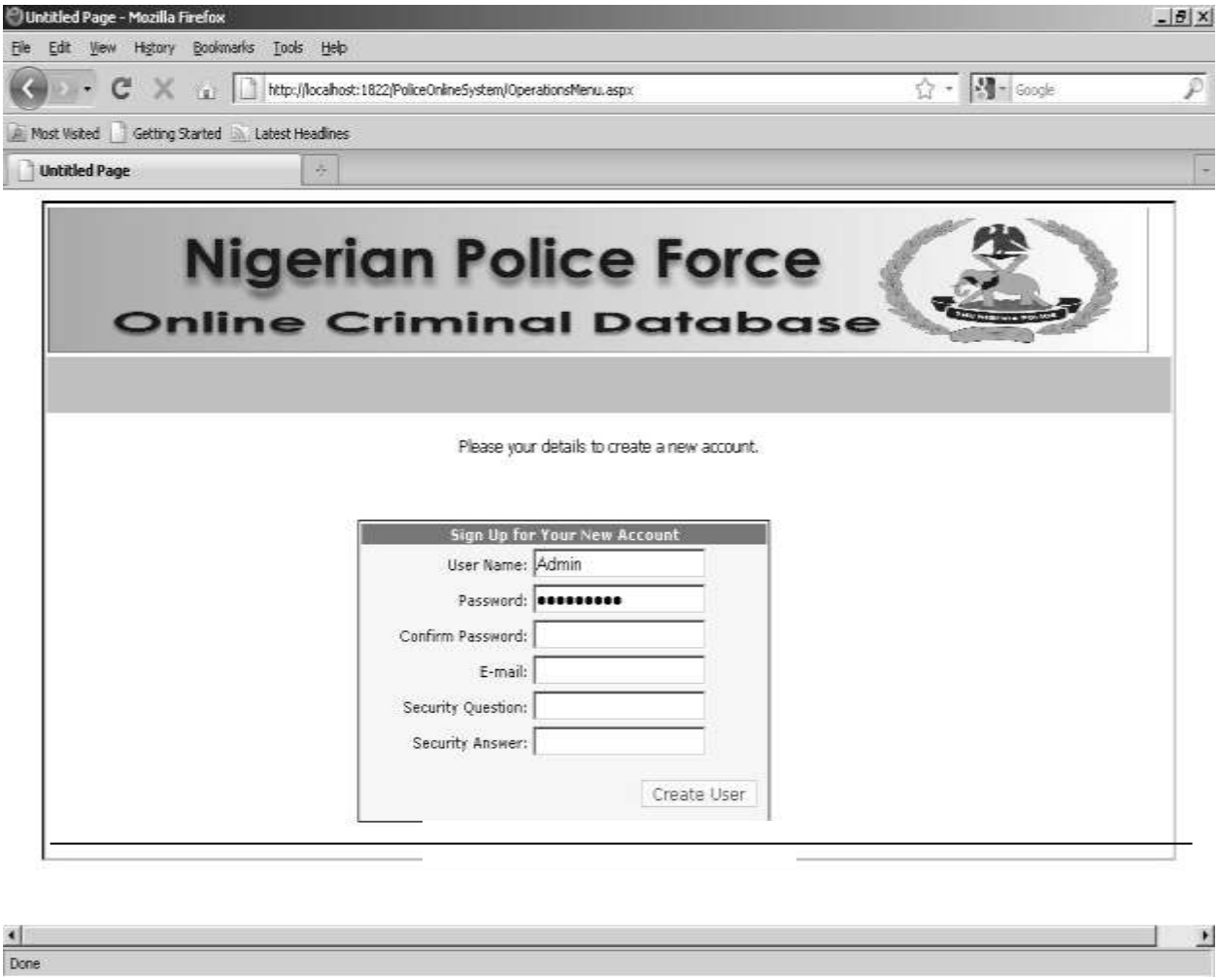
Training end-users and operation team on how to use the new system is very important. This ensures the maximization of the capabilities of the system which is the goal of the designer. Training should therefore be organized for the end-users and operation team members of the system.

4.17 Performing the Conversion

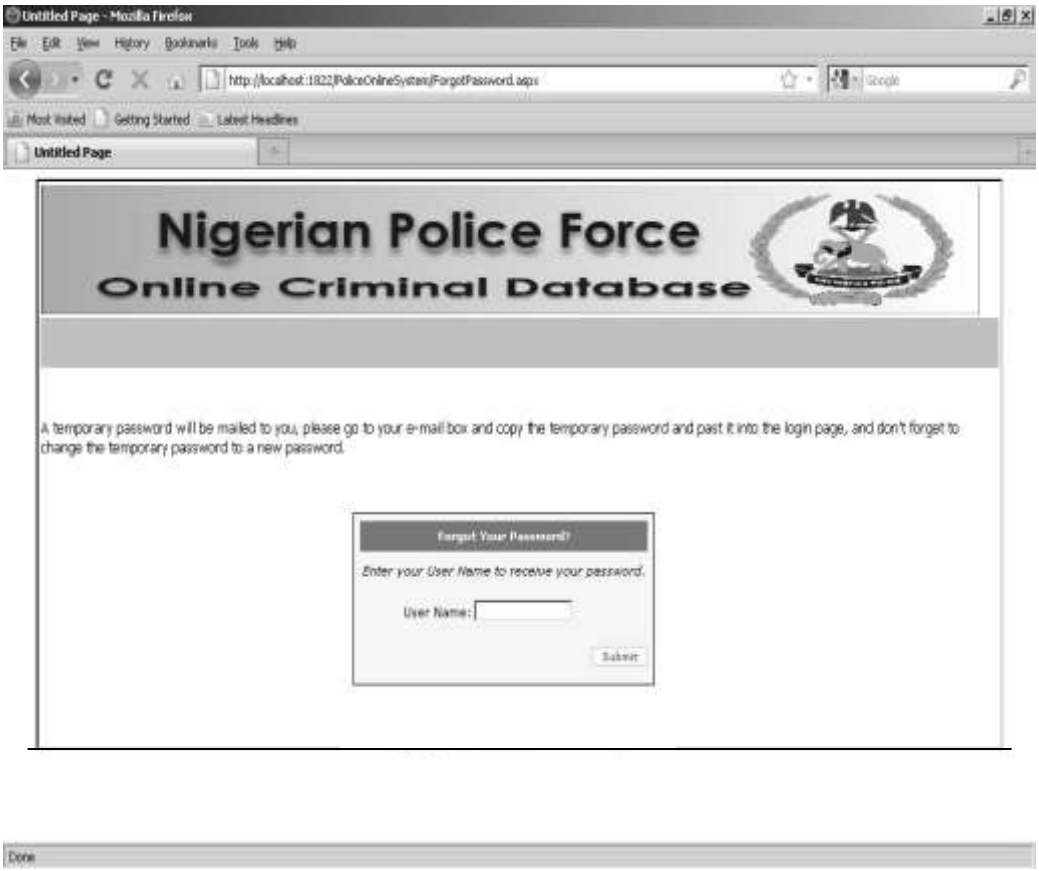
The conversion method for the new system is the parallel approach where the old and new systems are operated side by side until the new one shows its reliability and superiority.

This approach is favoured for this system because it has low risk in that if the new system fails, the police staff can just switch to the old system to keep its operations going.

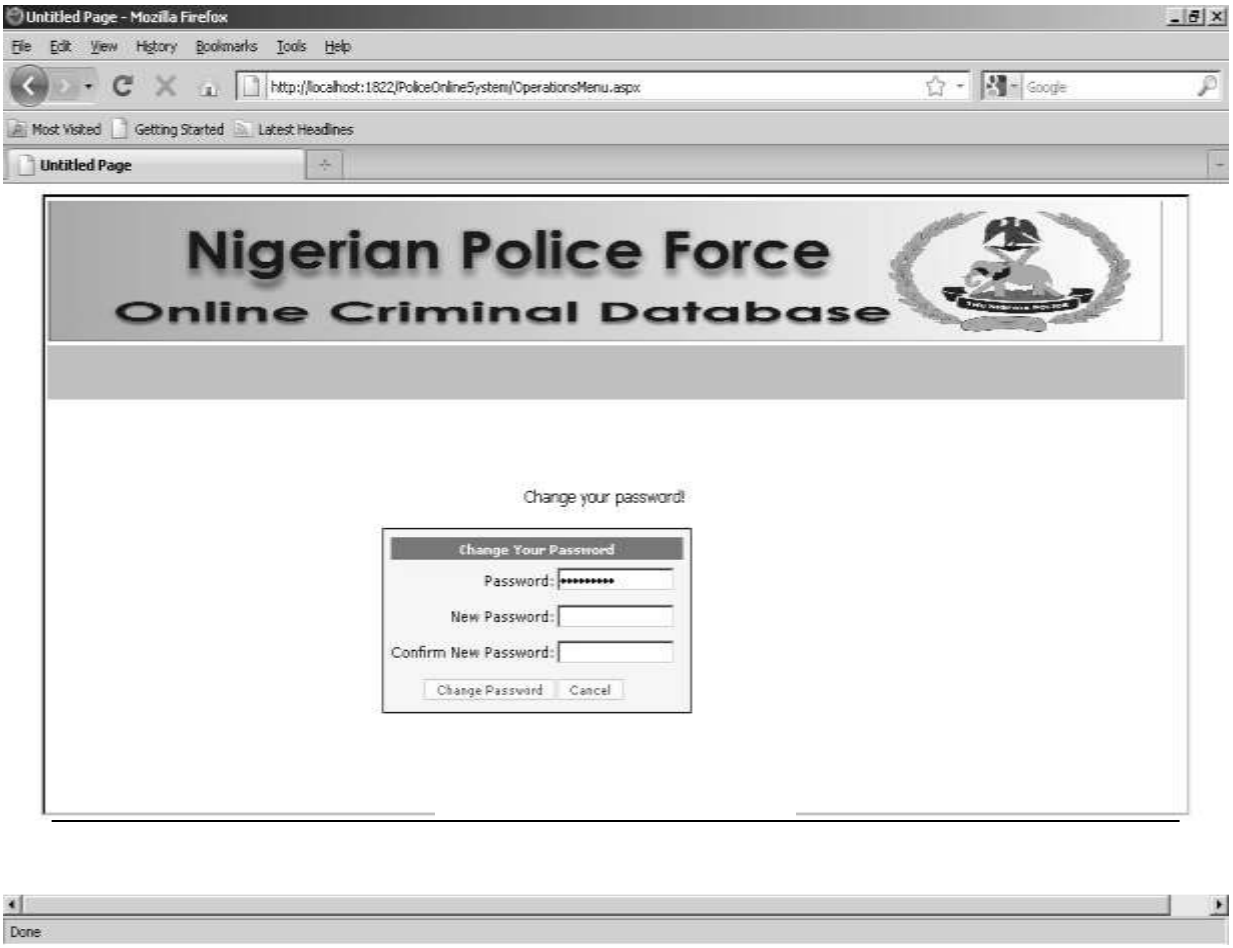
4.18 screen shots of Sample run of the Project



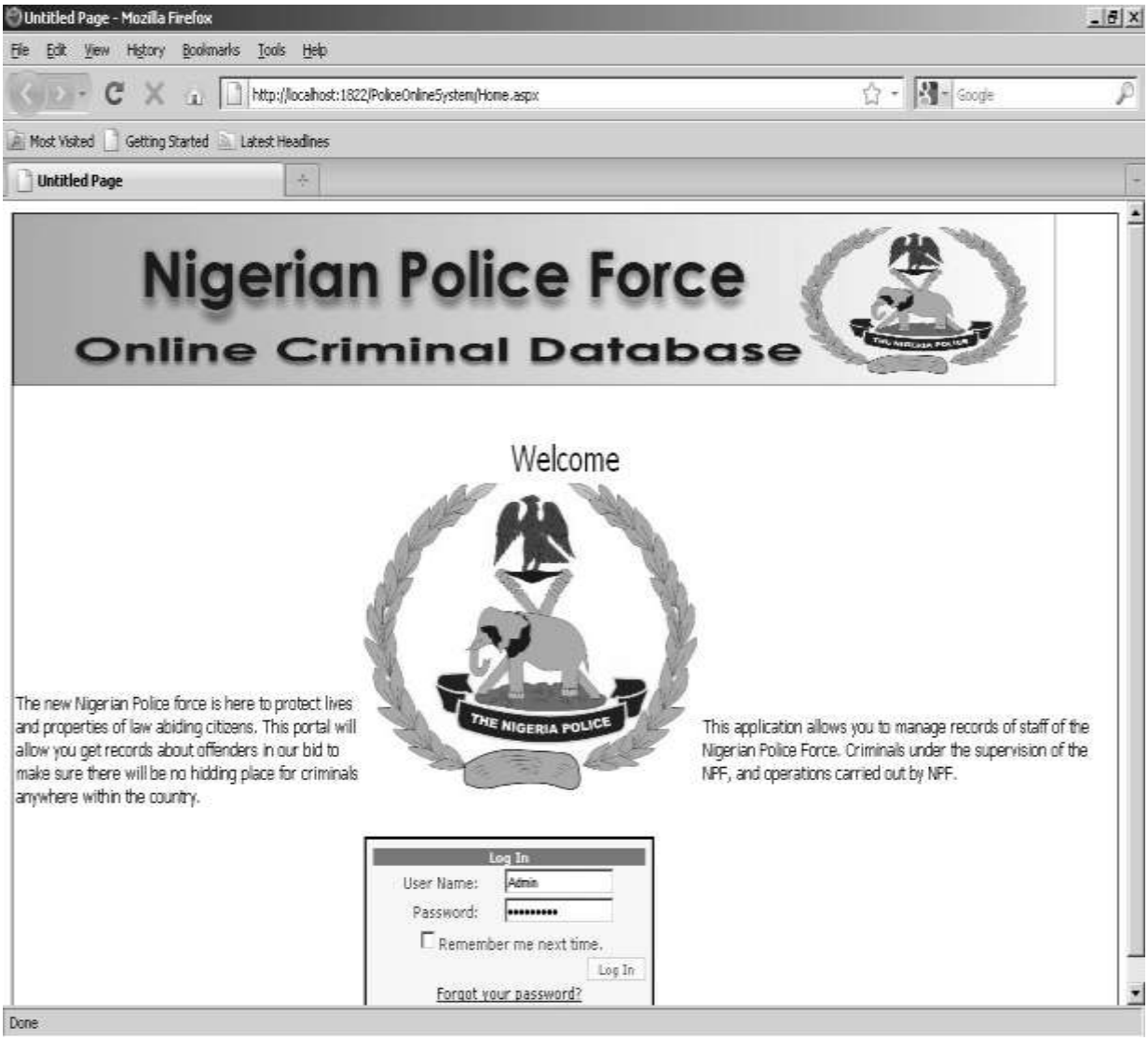
4.18.1 Screen Shots of Sample Run of Create User



Screen Shot of Sample run of User Name

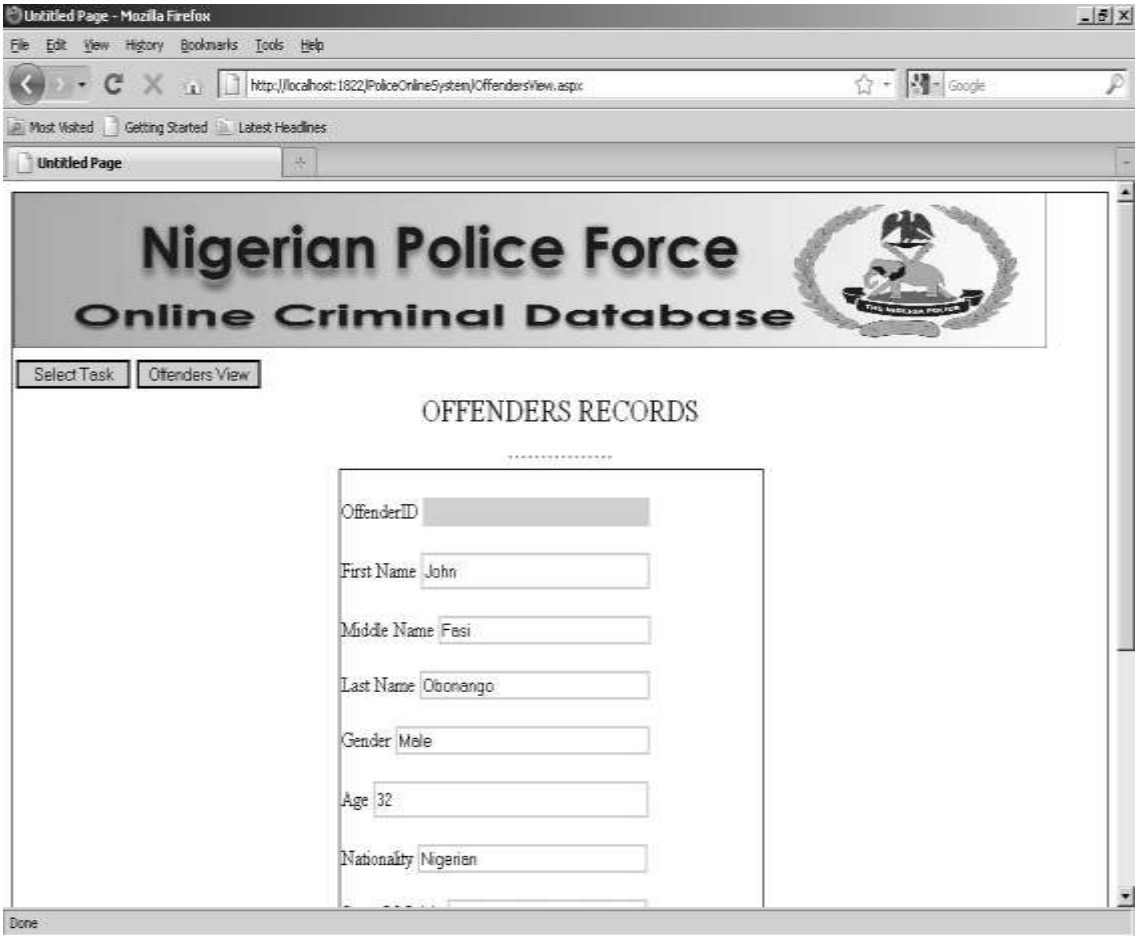


Screen shot of sample run of change password

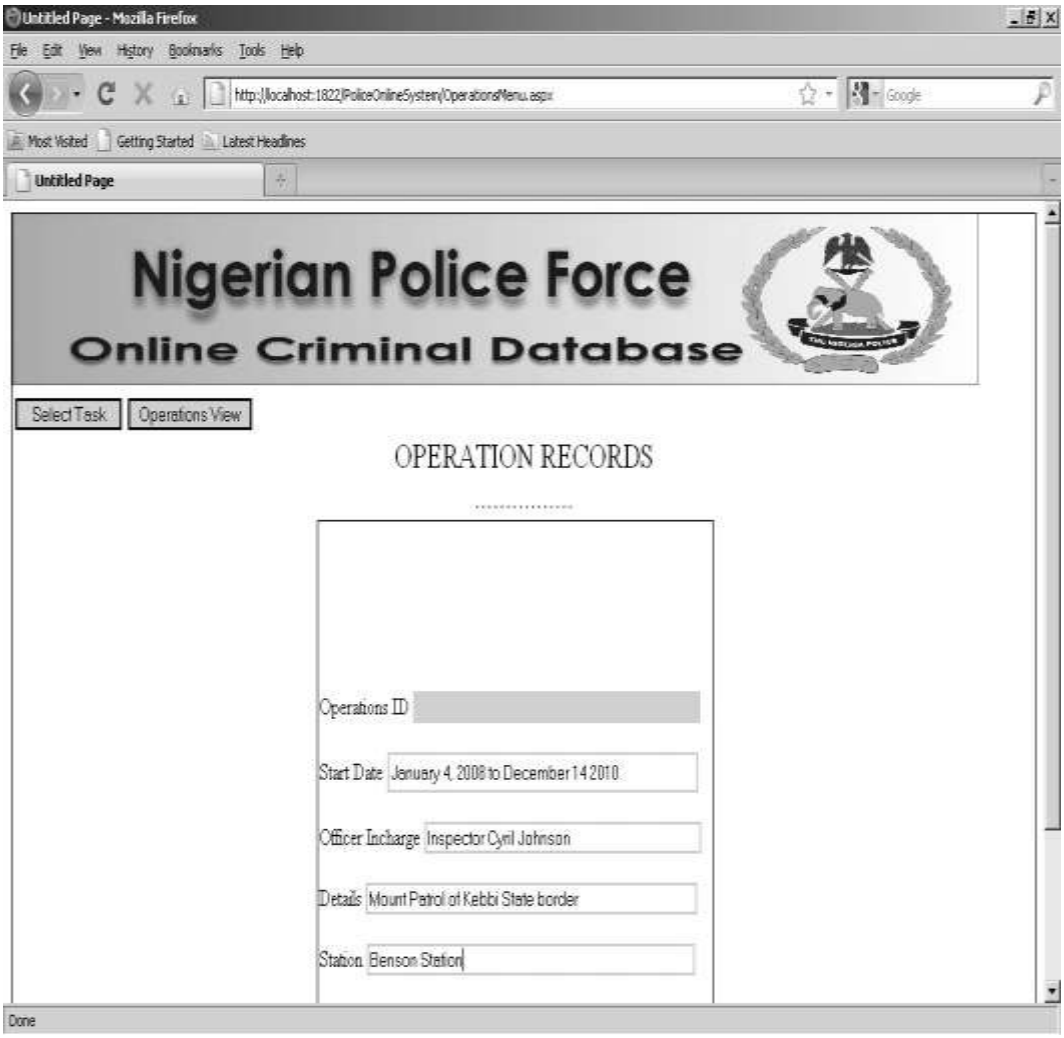


Screen shot of sample run of forgot your password

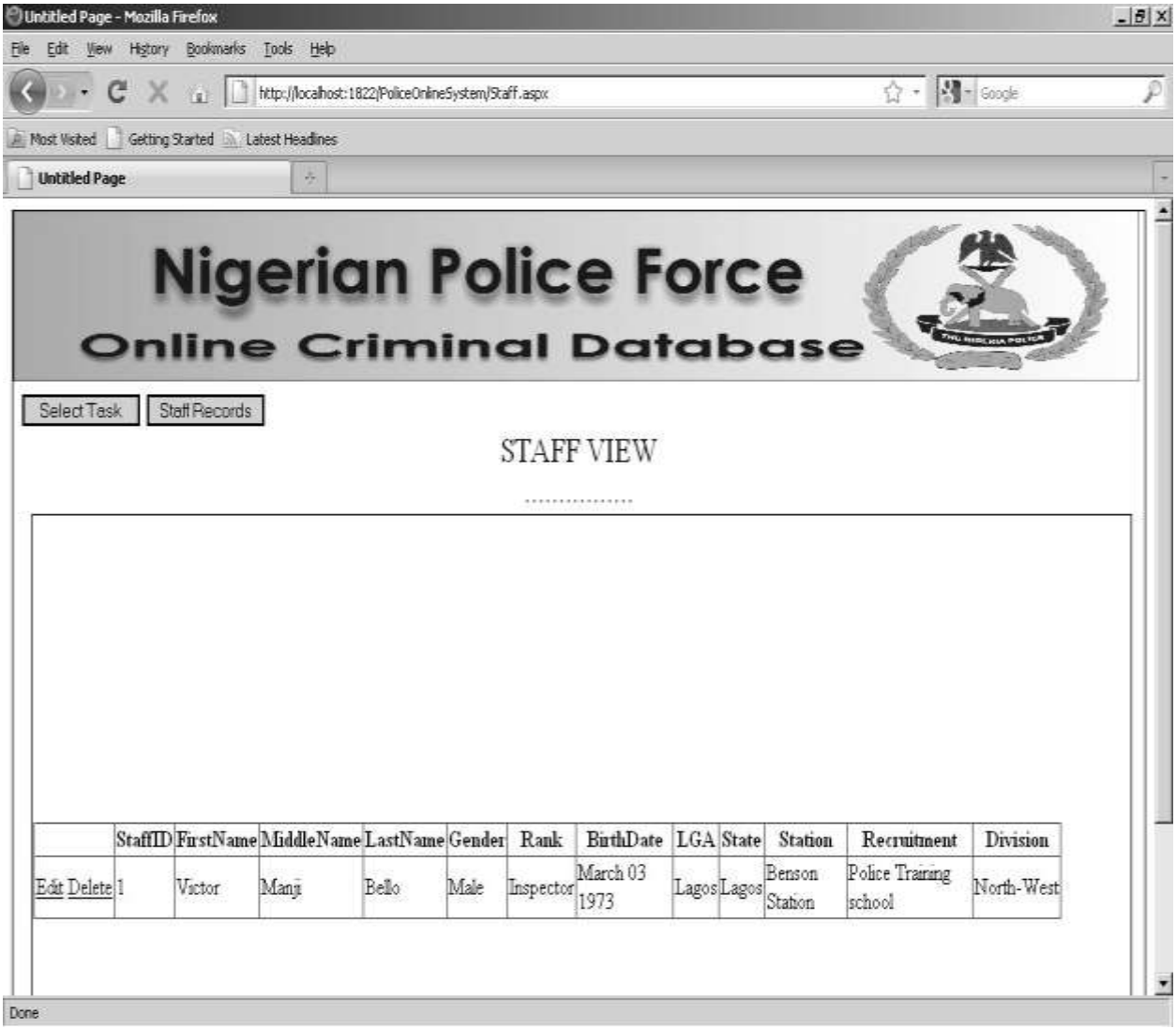
Screen shot of sample run of welcome page



Screen shot of sample run of Offenders Record

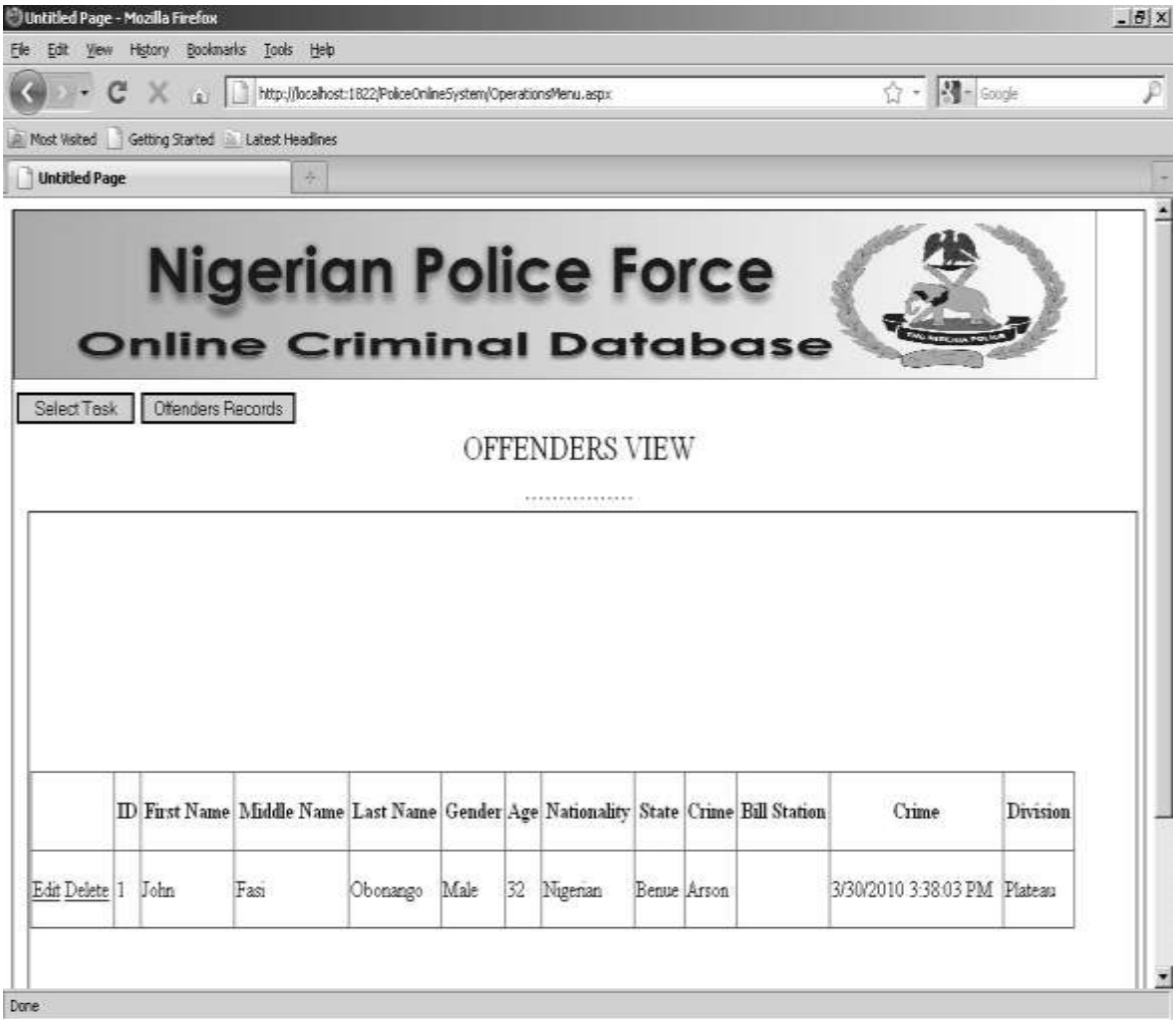


Screen shot of sample run of Operation Record



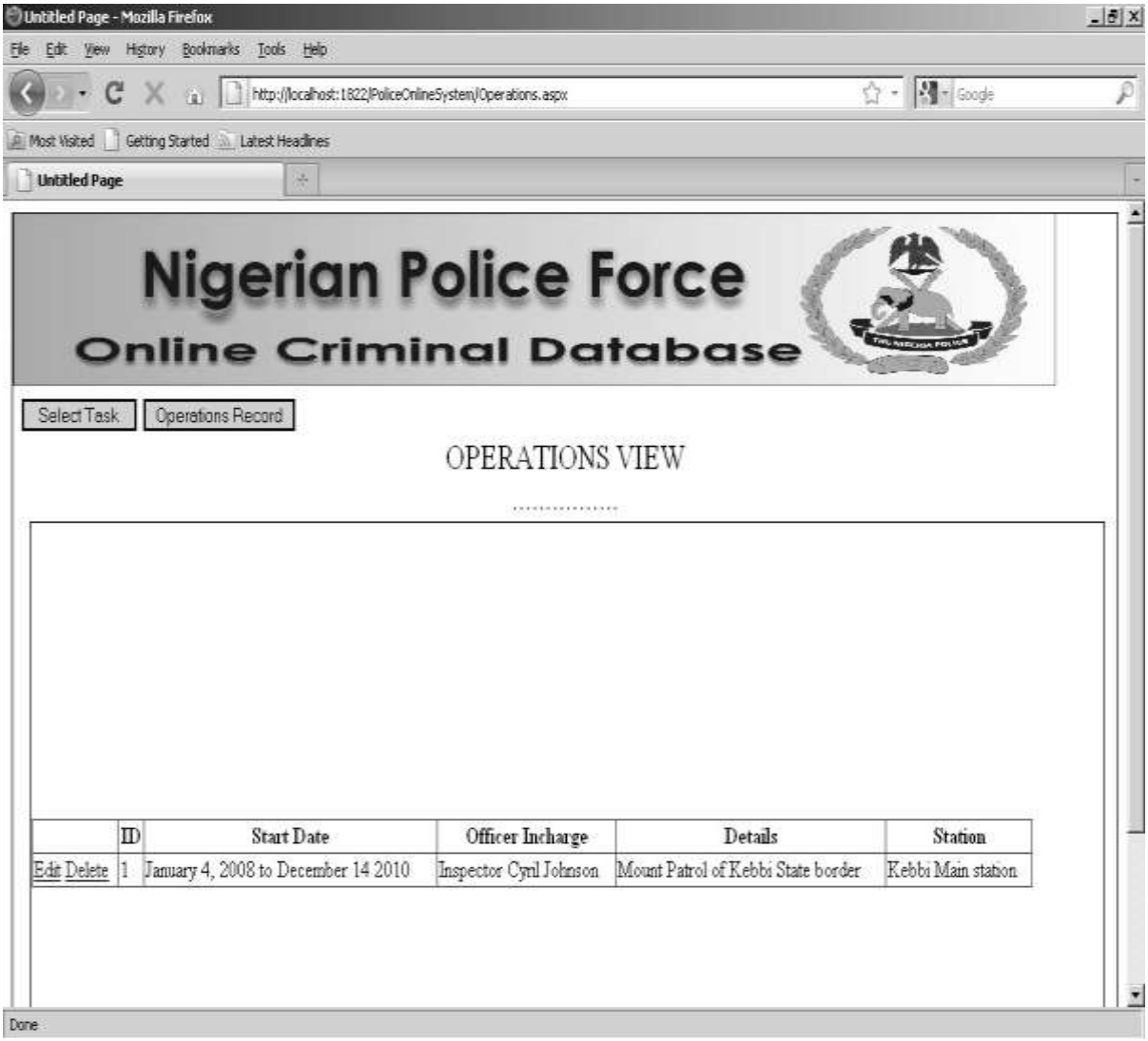
Screen shot of sample run of Staff view

Screen shot of sample run of Staff Record



	ID	First Name	Middle Name	Last Name	Gender	Age	Nationality	State	Crime	Bill Station	Crime	Division
Edit Delete	1	John	Fasi	Obonango	Male	32	Nigerian	Benue	Arson		3/30/2010 3:38:03 PM	Plateau

Screen shot of sample run of Offenders View



Screen shot of sample run of Operation View

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The whole project contains three major chapters which were carefully written to confirm to the three basic steps to develop a website and write a programme with Active Server Page (ASP) using Visual Basic Implementation.

In chapter one, the origin of the general Nigerian Police and that of the Plateau State Headquarters Command was highlighted to give the statement of problem, the aims and objectives of these study, the scope and significance with the problem and limitations of the project.

To fully comprehend the broad nature and aspect of this project, a critical expenditure was taken on the review of some related works in chapter two, where also some findings and observations were made with a general remark.

Chapter three contains the methodology or the experimental design. Here, the study area/study site, the materials used, the way these materials were sampled and their analysis as well as the design were discussed with the flow chart. Chapter four outlines the development of the online MIS. These were done using Macromedia Dreamweaver for the front and design while Microsoft Access, Active Server Page (ASP) and Visual BASIC Script were used to develop the database (back end).

From the study so far carried out, it has been observed that the manual method of recording or storing criminal cases has a number of flaws. But with

the present system involving the use of computer, easy insertion and deletion can be made on criminal records. Also, the proposed system will save cost for the organization.

5.2 Conclusion

In today's information age, information has become a priceless commodity which can solely determine or influence the success or failure of any activity, operation, organization and even economics. The Nigeria Police Force (NPF) needs timely and accurate information in not combating crime but also in prosecuting criminals.

This project has attempted to develop an online Police management Information System with an interactive database for the Police Headquarter Jos to enable the Commissioner of Police and other officers work more efficiently and effectively in this regard.

The purpose of this project is to look into the possibility of how the Commissioner of Police can interact with all the divisions under him and to see the records of all criminals with their passports and thumb hand print for future reference.

The project required that the police activities be computerized. It eliminates to a great extent the problems encountered by the present system and has other additional advantages such as future reference.

5.3 Recommendation

Because of the nature, the access, the ability of this website and programme developed, we strongly recommend that this project should not only be for the Plateau State Police Headquarters Command alone, but other police headquarters in the nation as a whole should join these trend of digitalization and develop such website to conform with this standards and objectives, with slight modifications to enhance and build their performance and productivities.

The Police personnel need to be trained on how to use computers effectively and efficiently and also how to use the Internet. This can be achieved through attending workshops and seminars.

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