**DESIGN AND IMPLEMENTATION OF A COMPUTERIZED MAILING SYSTEM**

(A CASE STUDY OF NIGERIAN POSTAL SERVICE (NIPOST) UYO)

**ABSTRACT**

*to the addressed recipient pose serious challenges, such as impossibility of reaching the addressed locations as a result of poor road network or communication in that area and also people claiming mails which was not sent to them. But with the advent of this new system, it is certain that the above-mentioned challenges have been effectively brought to rest. Also included in this research work are a brief overview on the computerized mailing systems, which are etymology of mails, contribution of modern transportation and technology to mailing, organization and payment of mails, privacy and censorship of mails, types if mails, the rise of electronic correspondence, servers and clients applications, protocols of mail transfers, as well as filename extension of different clients servers.*

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**CHAPTER ONE**

**INTRODUCTION**

1. **Introduction**

This chapter introduces a computerized mailing system. It focuses on the theoretical background of the research, statement of the problem, aim and objectives of the study, significance of the study, scope of the study and the organization of the study.

**1.1 Theoretical Background**

The mail or post is s system for physically transporting documents and other small packages, as well as a name of the postcards, letters and parcels themselves. Mail can also be known to be the official system of collection, transporting and delivery letters and parcels. A postal service can be private or public, though many government place restrictions on private mailing system. Since the mid-19th century, national postal systems have generally been established as government monopolies with the fee on the article prepaid. Proof of payment is often in the form of adhesive postage stamps, but postage meters are also used or bulk mailing. Modern private postal systems are typically distinguished from national postage agencies by the names “courier” or “delivery service”. Postal authorities often have functions other than transporting letters. In some countries, postal or mailing telegraphs and telephone service oversees the postal system as well as having authority over telephone and telegraph systems. Some countries postal systems allow for savings accounts and handle applications for passports. Deficiency in quick access to information on registered mails, such as addresses of recipients and other relevant information for the mail delivery pose a serious challenge on various mail service providers, especially in the Nigerian Postal Service, Uyo. But this new system after implementation will bring the mentioned problems and the likely ones to rest, improve the registration and also delivery of mails, as well as the entire operation.

**1.2 Statement of the Problem**

As earlier mentioned, problems have been perceived on the course of processing mails for delivery, which include time wastage in gathering information about the mail senders and the recipients of the mails respectively for safe delivery. The problems of easy generation of statistics on the mail services daily and especially in months or annually. Inability to post a received mail for the recipient to receive immediately or at that instant.

**1.3 Aim and Objectives of the Study**

The aim of this research work is to develop a computerized mailing system.

The objectives are:

1. To design a new system that will enhance the collection of information about mails to be sent, sender and the recipient (receiver).
2. To design a system that will enhance quick access to registered mails, delivery and the staff responsible for such.
3. To carefully study the existing system and get the related data from the case study.
4. To identify the problem or difficulties encountered associated with the existing mailing system, as well as proffering a solution with a new system.

**1.4 Significance of the Study**

The significance of the study include the following:

1. Manages and users of the system will experience utmost relieve when using the system as regard timeliness in the system.
2. It will improve security of data or information about mails on disposition in regard to the destination and delivery of the mails.
3. It would serves as a reference work for research on the same or related field.

**1.5 Scope of the Study**

The scope if this research covers computerized mailing system, with reference to Nigerian Postal Service, Uyo as a case study.

**1.6 Organization of the Research**

This project work is divided into five chapters. Chapter one starts with the introduction, followed with theoretical background, statement of the problem, aim and objectives of the study, scope of the study and the organization of the research.

Chapter two focuses on the review of related literature on the area of the research.

Chapter three is concerned with the system analysis and design (analysis of the existing and new system, as well as the design of the new system).

Chapter four comprises system implementation and documentation, which are system design diagram, choice of programming environment, hardware and software requirement and implementation.

Chapter five contains summary, constraint of the study, conclusion and recommendations by the researcher. Thereafter the appendices follow.

**CHAPTER TWO**

**LITERATURE REVIEW**

1. **Introduction**

As literature review, this chapter is concerned with overview of mail, mail services, and the service providers. It covers the etymology of mail, the effect of modern transportation and technology on the mailing system, organization and payment of mails, privacy and censorship of mails, rise of electronic correspondence and types of mails as well. This has gone far in sharpening the knowledge of the researcher regarding mailing system, especially computerized mailing system.

**2.1 Etymology of Mail**

The word mail comes from the Medieval English word male )spelled that way until the 17th century, distinct from male), referring to a traveling bag or pack. The French have a similar word, malle for a trunk of large box, and mala is the Irish term for a bag. In the 17th century, the word mail began to appears as a reference for a bag that contained letters: “bag full of letter” (1654). Over the next hundred years the word mail began to be applied strictly to the letters themselves, and the sack as the mailbag. In the 19th century the British usually referred to mail as being letters that were being sent abroad (that is on a ship), and post as letters that were for localized delivery, in the UK the Royal Mail delivers the Post, while in the USA the US Postal service delivers the mail. The term email (short for “electronic mail”) first appeared in 1978 to repair to the first email system. The practice of communication by written documents carried by an intermediary from one person or place to another almost certainly dates back nearly to the invention of writing, however, development of formal postal systems or mailing systems occurred much later. The first documented use of an organized courier service for the diffusion of written documents is in Egypt, where Pharaohs used couriers for the diffusion of their decrees in the territory of the state (2400 BC). The earliest surviving piece of mail is also Egyptian, dating to 255BC.

**2.2 Modern Transportation and Technology**

The Postal system was important in the development of modern transportation. Railroads carried railway post offices. During the 20th century, air mail became the transport of choice for inter-continental mails. Postmen started to utilize mail trucks. The handling of mail became increasingly automated. The internet came to change the conditions for physical mail. Email (and incent years social networking sites) became a fierce competitor to physical mail system, but online auctions and internet shopping opened new business opportunities as people often get items bought online through the mail. Modern mail is organized by national and privatized services, which are reciprocally interconnected by international regulations, organizations and international agreements. Paper letters and parcels can be sent to almost any country in the world relatively easily and cheaply. The internet has made the process of sending letter-like messages nearly instantaneous and in many cases and situations correspondents use electronic mail where previously they would have used letters.

**2.3 Organizational and Payment of Mails**

Some countries have organized their mail services as public limited liability corporations without a legal monopoly. The worldwide postal systems of the world’s self-governing states is co-ordinated by the universal postal union, which among other things sets international postage stamps and operates the system of international reply coupons. In most countries a system of codes has been created (they are called ZIP codes in the United States, postcodes I the united kingdom and Australia, and postal codes in most other countries), in order to facilitate the automation of operations. This also includes placing additional marks on the address portion of the letter or mailed object, called “bar coding”. Bar coding of mail for delivery is usually expressed either by a series of vertical bars, usually called POSTNET coding, or a block of dots as a two dimensional barcode. The “block of dots” method allows for the encoding of proof of payment of postage, exact routing for delivery, and other features. Payment-worldwide the most common method or preparing postage is by buying an adhesive postage stamp to be applied to the envelop before mailing; a much less common method is to use a postage-prepaid envelop. Franking is a method of creating postage-prepaid envelopes under license using a special machine. They are used by companies with large mail programs such as banks and direct mail companies. In 1998, the U.S postal service authorized the first test of a secure system of sending digital mail 9electronic mail) via the internet to be printed out on a personal computer printer.

**2.4 privacy and Censorship of Mails**

Documents should generally not be read by anyone other than the addressee; for instance, in the United States of America it is a violation of federal law for anyone other than the addressee and the government to open mail. There are exceptions though; executives often delegate to secretaries or assistants the task of dealing with their mails; and postcards do not require opening and can be read anybody. For mail contained within an envelop, there are legal provisions in some jurisdictions allowing the recording of identities of sender and recipient. The privacy of correspondence is quaranteed by the constitutions of Mexico and Brazil, and is alluded in the European Convention of Human Rights and the Universal declaration of Human Rights. The control of the contents inside private citizen’s mail is censorship and concern social, political, and legal aspects of civil rights. International mail and packages are subject to customs control, with the mail and packages are often surveyed and their contents sometimes are edited out. There have been cases over the millennia of governments “opening and copying of photographing the contents of private mail. Subject to the laws in the relevant jurisdiction, correspondence may be openly or covertly opened, or the contents determined via some other method, by the police or other authorities in some cases relating to s suspected criminal conspiracy, although black chambers (largely in the past, though there is apparently some continuance of tier use today) opened and open letters extra legally. The mail service may be allowed to open the mail if neither addressee nor sender can be found , in other to attempt to find either. Mail service may also open the mail to inspect if the materials are hazardous to transport or violate the local law. While in some cases mail censorship is exceptional, military mail to and from soldiers on active development if often subject to surveillance. In active fighting, censorship may be especially strict to hide tactical secrets, prevent low morale from bad news.

**2.5 Rise of Electronic Correspondence**

Modern alternatives such as the telegraph, telephone, telex and e-mail have reduced to attractiveness of paper mail for many applications. These modern alternatives have some advantages: in addition to their speed, they may be more secure, because the general public can nit learn the sender’s address from the envelope, and occasionally traditional items of fail to arrive. For example, due to vandalism to mail boxes, unfriendly pets, adverse weather conditions. Mail carriers due to perceived hazards or inconveniencies, may refuse, officially of otherwise, to deliver mail to a particular address (for instance, if there is no clear path to the door or mail box). On the other hand traditional mail avoids the possibility of computer malfunctions and malware, and the recipient does not need to print it out if he wishes to have a paper copy, though he would need to scan it if he wishes to have a digital copy. Physical mail is still widely used for business and personal communications for various reasons including legal requirements for signatures, requirement to enclose physical objects. For example, wedding invitation in some countries are customarily sent by mail. Since the advent of e-mail, which is almost always much faster, the postal system has come to be referred to in internet slang by metonym” snail mail”. Occasionally, the term “white mail” or the paper Net” has also been used as a neutral term for postal mail. Mainly in the 20th century, experimentation with hybrid mail has combined electronic and paper delivery. Electronic mechanisms include telegram, telex, facsimile (fax), e-mail, and short message service (SMS).

**2.6 Types of Mail**

Mails are identified by on their classification; and delivery schedule.

1. Conventional Mail: These can be classified according to the delivery schedule or other qualities. They include: first class mail, second class mail and registered mail. First class mails are mails that require faster delivery than ordinary mail and they attract extra postage fees. Second class mails are mails delivered at no cost other than the stipulated postage rate, a rate lower than that of first class mail. Registered mails are mail items requiring special handling because of its contents, which may be money order, postal order, bank draft etc. An extra fee is charged in addition to the postage payment.

2. Business Mail – Business mail service is concerned with processing mail which are exclusively meant for business purposes (transactions).

**CHAPTER THREE**

**SYSTEM ANALYSIS AND DESIGN**

**3.0 Introduction**

This chapter focuses on the research methodology of this research. It studies the system analysis which is analysis of the existing system, problems of the existing system analysis the proposed system, advantages of the proposed system and disadvantages of the proposed system. Also, included are system design, input layout, program flowchart, output format.

* 1. **Research Methodology**

Research methodology is the structural approach used in the collection of relevant information for the completion of this research work through a religions observation of the existing system as well as intense interview with users of the manual method of mailing system.

* 1. **System Analysis**

Actually this segment critically relies on the analysis of the existing system, and problem of the existing capture in this also is the analysis of proposed system.

* + 1. **Analysis of the Existing System**

The existing system of mailing is mainly done manually which are as a result demand users to waste much time to accomplish the given task as well as creating undue inconveniences to them.

* + 1. **Problem of the Existing System**

As the study proceeds a lot of problems were encountered in the system which is the basic quality which cause for a change and better modification, its major problem is that deliveries are done behind time and may end up at the wrong destination

* + 1. **Analysis of the Proposed System**

With regards to the inherent problems associated with the current system. It is quite pertinent to proposed and established a computer based system mailing system.

* + - 1. **Advantages of the Proposed System**

1. It reduce intrusion to users data
2. It save time when compared to the existing system
3. It create convenience and user friendliness to the operators
4. It reduces loss of information due to poor delivery services
5. It generally improve the knowledge base of computing in our society
   * + 1. **Disadvantages of the Proposed System**

**Virus:** There might be the possible corruption and damage of files if the system is attacked by virus.

**Interrupted** **Power Supply:** The system cannot be put to use when there is power outage, a generator and uninterrupted power supply (UPS) should be made available to the company to guard against irregular power supply or power fluctuation. Power surges could damage stored data.

**Maintenance:** The system has to be maintained regularly by not letting dust to get in contact with the system.

* 1. **System Design**

This is the process of planning the design of new system, or the step by step breakdown of how the new system functions or how it is being operated. It includes:

1. Input layout
2. Output layout
3. Program flowchart
   * 1. **Input Layout**

This design helps the user to gather data for the system.

**3.3.2 Program Flowchart**

See Appendix A

* + 1. **Output Format**

This design displays the processed data in the form of report. To view refers to Appendix C.

**CHAPTER FOUR**

**SYSTEM IMPLEMENTATION AND DOCUMENTATION**

1. **Introduction**

This chapter focused on the implementation of the new system, the system design diagram, choice of programming language, the software and hardware requirements, analysis of modules, programming environment and implementation of the system.

**4.1 System Design Diagram**

* 1. **Choice of Programming Language**

There are different types of programming language which include HTML, Q-BASIC, VISUAL BASIC, JAVA, to mention but a few. For the purpose of this research visual basic programming language is used. This is because it help to develop program that runs on all platforms with a user-friendly interface.

* 1. **Programming Environment**

Several compatible hardware and software resources were used in accomplishing this research work which is specifically categories below:

* + 1. **Hardware Requirement**

The hardware requirement includes:

1. At least 40 gigabyte of hard disk
2. At least 500MB of RAM
3. Processor speed of at least two megabyte
4. A functional keyboard
5. UPS
   * 1. **Software Requirement**
6. Visual Basic Net 2008
7. Windows 7, 8, 9
8. An effective antivirus

**4.5 Implementation**

This is system testing phase of the system development life cycle which includes the installation of the system and the initial use of the complete system.

For any system to output result, the user must be able to use the system effectively. This is user friendly, menu-driven, flexible and interactive. Thereby, offering users the ease of learning and training staff on the use of computer based system. Once the training is completed, the system is implemented and the manual system has to be replaced. The following changes over procedure are available in this study.

1. Parallel Conversion: This method of conversion allows both the new and old system to run alongside each other. It allows the need system to prove itself before the old one is taken offline.
2. Pilot conversion: this is quite similar to parallel implementation or conversion, with the pilot system only a portion of the new system is run alongside the new system.
3. Direct conversion: This is where old system stopped and the new system is started.
4. Phase conversion: Part of the old system are replace by the new system. That is part of the new system are used for training purposed until the next part is ready for implementation.

The method specifically used for this research is the parallel conversion which allows for the new system to be tested with a real world set of data, which can be compared to the old system.

**CHAPTER FIVE**

**SUMMARY, CONCLUSION AND RECOMMENDATION**

1. **Introduction**

This chapter which is specifically the final of this research work is consists of constraint of the study, summary, conclusion and recommendations.

**5.1 Constraint of the Study**

1. The challenge of unsatisfactory response from the users of the existing method of mailing
2. Materials related to the research work were highly limited at the school library.
3. The transport fare that was paid to where the most and reliable materials where gotten posed another challenge.
4. The time given to complete the work was too short.
   1. **Summary**

As aforementioned, that the new system when fully operational will be used to effectively manage the process of mailing between organizations and individuals as well as increasing the security level of mailing in the country.

**5.3 Conclusion**

Conclusively, this research work has successfully accomplished a computerized mailing system that has replaced the manual/existing mode of sending mails.

**5.4 Recommendations**

Below are the recommendations of this research work

1. More compatible computers should be procured to run this application.
2. Organizations and individuals should be taught on how to make use of the new system effectively.
3. Antivirus software should be installed on the computers.
4. The systems should be secured with password to prevent intrusion.