

**INTERNET BANKING AND RISK CONTROL  
MANAGEMENT IN NIGERIA  
A CASE STUDY OF WEMA BANK NIGERIA PLC**

**BY**

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**PGD/GST/2005/2006/210**

**DEPARTMENT OF GENERAL STUDIES  
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA**

**JULY, 2008**

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PROJECT SUBMITTED TO THE DEPARTMENT OF  
GENERAL STUDIES, FEDERAL UNIVERSITY OF  
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IN BUSINESS MANAGEMENT TECHNOLOGY

**JULY, 2008**

## CERTIFICATION

This is to certify that this project work titled "Internet Banking and Risk Management in Nigeria a case study of Wema Bank Nigeria PLC" was carried out by Saidu Idris with Registration number (PGD/GST/2005/2006/210) and meets the requirements governing the award of Post Graduate Diploma (PGD) degree in Business Management Technology of the Federal University of Technology Minna.

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Sign and Date

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(Head of Department)

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Sign and Date

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External Examiner

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Sign and Date

## DEDICATION

I dedicate this project work to my beloved wife; Aishat Idris Sa'idu and my daughter; Humaira Idris Sa'idu.

## ACKNOWLEDGEMENT

Praise is to Allah the Lord of the world. Who has created the heaven and the earth, the darkness and the light. To Him you will be brought back. We could not truly have been led aright if Allah had not guided us. Is Him we worship and whom we ask for help. And whose guidance and protection saw me throughout this programme.

I deeply appreciate the effort of my able and diligent supervisor, **Alh. D. Hakimi** for the successful accomplishment of this project work.

I also acknowledge the limitless effort of the head of department, **Dr. Mrs. H. Shehu**, more so the fatherly guidance of **Professor K.R. Adeoye** and the programme coordinator, **Dr. S. K. Tswayan** and other lecturers of General studies department who are worthy of thanks.

Special gratitude go to **my parents, brothers, sisters and friends** for their support.

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Thank you all.

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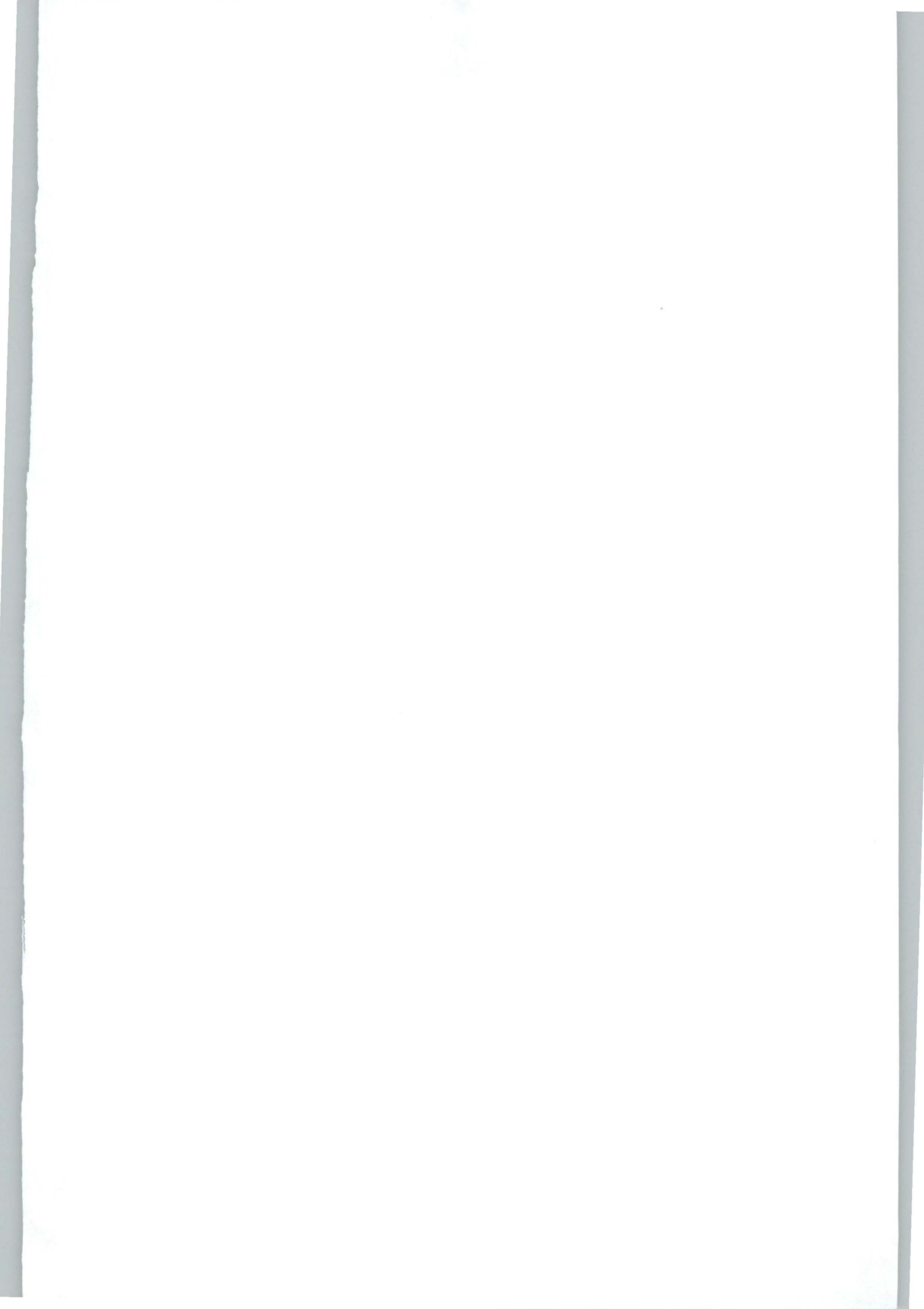
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## **ABSTRACT**

The Internet has played a key role in changing how we do businesses and how we interact with other people today. As a result of internet, electronic Banking system emerged, allowing business to move effectively thereby interacting with their customers and other corporations inside and outside their industries. However, as far as this project work is concerned, a simple program is written and implemented using Visual Basic 6.0 for checking customer's account balance using Wema Pc – Banking (Wemview). This programming language was chosen for its flexibility and has a lot of facilities for data storage, retrieval, input and other accessories.

# CHAPTER ONE

## INTRODUCTION TO E - BANKING

### 1.1 INTRODUCTION

Nowadays, no one can deny that electronic banking has been playing an extremely important role in our society. This importance has especially increased over the past decade due to the great progress in using internet as a means of communication. Banks are clear examples of those bodies that fundamentally depend on electronic data in executing their jobs.

Electronically based payment systems have been in operation since 1960s and have been expanding rapidly as well as growing in complexity.

However, in most of the major industrialized countries, an inverse relationship exists between the volume and the number of transactions handled electronically. Typically, in business transactions around 85-90% or more of monetary value will be processed electronically, while 5-10% of the total number of payment transactions will be handled in other ways. This has been due to four related factors: -

1. Proprietary closed networks were developed by banks to handle large and increasingly internationally based payment systems.
2. Large value payments are increasingly associated with foreign exchange and global securities transactions. Thereby becoming divorced from underlying world trade.
3. Large value payment systems were not designed nor are they cost-effective for small value payment.
4. Paper-based non-automated payment systems remain an established part of accepted business practice. For varying institutional reasons, thereby remaining ingrained in the economic system.

The internet is experiencing a rapid growth which is being largely driven by new commercial users of the networks. Many people are browsing the internet each day to obtain information on the whether forecast, latest sports scores, local news and many other exciting information.

The internet is estimated to already have in excess of 400 million users, and according to figures published by National Science Foundation (NSFnet), the network has been more than a doubling of users over the last 12 months to January 1995. The internet and other global machine networks are creating new commercial opportunities for network commerce.

Moreover, most of the new generation banks and some of the traditional banks in Nigeria today are offering E-Banking services. This indicates that the internet is playing a major role in every one's life and promoting the electronic banking.

## 1.2 BACKGROUND OF STUDY

Banking over the Internet has attracted increasing attention from bankers and other financial services industry participants, the business press, regulators, and law makers, both in Nigerian States and other countries. Among the reasons for Internet banking's audience are the notion that electronic banking and payments will grow rapidly, cut banks' costs, increase banks' revenue growth, and make banking more convenient for customers; and some vexing public policy issues.

Simpson (2002) suggests that e-banking is driven largely by the prospects of operating costs minimization and operating revenues maximization. A comparison of online banking in developed and emerging markets reveal that in developed markets lower costs and higher revenues are more noticeable.

However as posited by Williams (2002), organized crimes have increased in line with the increased use of Internet. Hence in a country like Nigeria where cases of fraudulent uses of Internet are rampant, regulating Internet banking becomes not only a national concern, but also attracts some international attentions. At the same time, the capacity of the existing regulation to adequately address the complexities created by this mix-up remains very doubtful (Ezeoha, 2005a).

The conventional banking laws and policies to address cyber transactions is thus inconsistent. This has been mainly so because most of the existing national banking laws were designed and formulated before the advent of Internet (Wallsten, 2003). In effect, much of the current regulatory and supervisory apparatus governing the operations of banks were designed based on physical location, as against the remote (and sometimes virtual) system of Internet banking. Even at present, there are no enforceable cyber crime regulations in most of the developing African countries, Nigeria inclusive, and where such laws exist they are hard to enforce (Udotia, 2005). For some countries therefore, the elementary stages of Internet development evolved without any definite regulatory structure on ground.

### **1.3 STATEMENT OF THE PROBLEM**

In the case of Nigeria, effective regulation, especially of Internet banking operations have become very necessary. The country, which is an English-speaking nation, has high reputation for Internet fraud the world over; it is highly populated and has the largest market in Africa; economic and political corruptions are rampant and persisting; poverty and unemployment among young men and women are almost as high the country's population; it has the fastest growing ICT market in Africa and; its banking system is currently facing the largest industry convergence in the history of banking in Africa ( This Day December 28, 2005) ..

With these mixed developments, it is clear that the country needs adequate regulatory policies and control of internet banking risk to ensure proper risk management system in all national banks in line with international standards. These shall further ensure that all the major background problems such as poverty, corruption and bad governance are fully addressed and; ensure adequate interface and collaborations between our local law enforcement agents and the various international agencies that are presently pursuing the course for safe Internet cyber community.

### **1.4 AIMS AND OBJECTIVES OF E-BANKING**

#### **AIMS**

The main aim of this project is to look at internet banking, its usability processes, effects and the risk controls which would better the managements of national and international banks as well as the standards. We shall also develop a computer program for certain banking operations with Wema Bank as a case study, where customers can interact conveniently and effectively with their financial service providers through the provision of adequate computers and other infrastructural facilities.

## **OBJECTIVES**

1. To provide guidance to bankers and examiners on identifying and controlling risk associated with internet banking activities.
2. To determine adequacy of the institution's policies, procedures and internal controls as they relate to internet banking.
3. To set the scope for assessing the quantity of risk and quality of risk management in internet banking
4. To attract and retain new customers.
5. To eliminate costly paper handling and teller interactions in an increasingly competitive banking environment.
6. To integrate communications, data management and security services.
7. To allow business application within different organizations to automatically interchange information.
8. To enable banks other financial institutions to increase the use of electronic channels for receipt and delivery of their products and services.

## **1.5 SCOPE AND LIMITATIONS**

### **THE SCOPE**

The scope of this project work includes internet banking, its services, effects and the risk control management in Nigeria, using Wema Bank Nigeria Plc as a case study at the same time as one of the communication services which betters relationship between the banks and their customers.

It also outlines the benefits obtained in using internet banking such as convenience, ambiguity, transaction speed, efficiency and effectiveness. These have been illustrated with a simple sample programmed that shows how a simple transaction is done (that is using Wema Bank PC- Banking in checking account balance and opening new account) as well as security encryption methodology.

## **THE LIMITATIONS OF E-BANKING IN NIGERIA**

1. Most banks in the Nigerian market have websites. For the most part, these sites are only electronic brochures, providing static corporate and product information but lack the functionality found on the sites of financial service companies in more developed markets.
2. Poor infrastructure for example, World Bank indicates that in Nigeria there are only 6 computers and 4 main line telephones lines per thousand people. Nigeria has very low internet penetration, with less than one internet service provider per thousand people and only an estimated 30,000 internet users out of over 100million. Also internet bandwidth is negligible when compared with more developed nations and there has been insufficient deregulation of the telecommunication sector to allow investors to provide these bandwidths.
3. Inappropriate security is the biggest deterrent for individuals interested in making on-line purchases. Most people fear giving their credit card numbers, phone numbers or addresses not knowing who will be able to retrieve that information without their consent.
4. Absence of an appropriate legal framework is the major challenge facing the growth and development of internet banking in Nigeria such as law enforcement agencies on cyber crimes and fraudulent.
5. Another biggest challenge for electronic banking is finding customers and vendors who are willing to risk investing in a product that is current in its introduction stage.
6. Finally, risk control and management are also lacking in our new generation banks because of large number of internet user per minute.

This has created a chicken and egg effect. Banks software companies can't get customers without vendors, and they can't get vendors without customers.

## 1.6 JUSTIFICATION OF THE STUDY

Banks operating in Nigeria have been challenged to provide the necessary impetus and force required to drive the penetration of an internet and IT culture among the populace. To date, commercial banks have shown only limited interest in the internet. Given their focus on private, proprietary networks, it is not surprising that banks view with some misgiving a computer network which has been established to facilitate the free exchange of non-sensitive and non-financial information. Some argue that it is the very openness of the internet which makes it unsuitable for handing transfers of information relating to money or value. The general view taken is that customers will not require internet-based payment systems for some time to come and that existing payments methods will therefore remain dominant. There are parallel concerns about preserving the integrity of existing investments in payment infrastructure alternatives.

Bankers also argue that since the internet is not owned by anybody and users are spread all over the world, security would be almost impossible to implement because of the different legal, tax and regulatory regimes which would apply. Nevertheless, commentators within the financial services industry recognize that changes are taking place.

Charles Sanford, the chairman of Banker Trust, anticipates that late staggering amounts of information before they make decisions about their investments. The role of intermediary will increasingly be taken by electronic bulletin boards, which will match buyers with sellers, borrowers with lenders. Payments and settlement systems will permit transactions to be instantly verified and settled through a global payment system (Economist, 1994).

However, banks play a major role in the development of the nation's economy and should be the drivers of the Information Technology directed change. Not embracing the internet will have repercussion not only on the banking industry but also on the entire Nigerian economy. The whole world has adopted the



internet and not to do so quickly would be to make this country less relevant in the global arena. Nigeria will then be relegated to a country merely for the purchasing commodities and will be unable to play a part in the new-world economy.

## **1.7 DEFINITION OF OPERATIONAL TERMS**

“e” a prefix meaning, 'electronic' as for example, e-mail, e-banking, e-commerce.

**BACS (BANKS AUTOMATED CLEARING SYSTEM):** this is an electronic payment system allowing funds to be moved between banks accounts electronically.

**PC:-** personal Computer.

**COMPUTER:** - this is an electronic device, which accepts data as input, process it, and gives out the result in form of information.

**AUTOMATED CLEARING HOUSE (ACH):** - A service used by financial institutions to exchange electronic payments drawn one on one another. Total debits and credits (payments and deposits) and itemized accounting of individual items are presented. This reduces transportation expenses and simplifies the transfer of funds between customers' accounts.

### **AUTOMATED TELLER MACHINE (ATM)**

A machine used for banking services including:

- ✓ Withdrawals and deposits.
- ✓ Balance inquiries.
- ✓ Transfer and other services.

Customers access an ATM by using a plastic card encoded with electromagnetic identification such as an access card or credit card. Transactions are processed electronically with the aid of computer systems.

## **AUTOMATIC BILL PAYMENT**

A service allowing customers to authorize their financial institutions to make regular transfers to certain expenses (such as a mortgage, insurance premiums, utilities etc) from their checking or savings account. Also known as direct payment and direct debit.

## **DEBIT CARDS**

Plastic cards encoded with electromagnetic identification. Financial institutions may issue them to customers who meet certain qualifications. Customers can use their card to pay or purchases electronically using Point-of-sale terminals. Debit cards are often issued with ATM capability.

## **DIRECT DEPOSIT.**

A service provided by many employers, government agencies, and other parties. The party offering the service can transfer fund electronically to the appropriate financial institution, which deposits the funds directly into an individual's account. The customer receives a written notification that the funds were deposited, including the effective date and account number used for the transaction.

## **ELLECTRONIC FUND TRANSFER (EFT)**

A generic term describing any transfer of funds between parties of financial institutions via electronic data systems.

## **INTERNET BANKING**

A service provided by many financial institutions that allow consumers to use the internet to carry out activities such as: -

- ✓ Viewing account balances and transactions.
- ✓ Transferring money between accounts and paying bills.

### **PIN (PERSONAL IDENTIFICATION NUMBER)**

A code number used by the customer to authorize transactions using an access card or some other form of authentication. The code number may be assigned by the financial institution or chosen by the customer and is not issued to other parties.

The PIN number should always be kept secret by the customer.

### **POS (POINT – OF- SALE) NETWORK**

A network that includes financial institutions, debit cardholders and merchants that permits customers to make electronic payments at the place of purchase.

### **SMART CARD**

A card-based payment system that stores value for transactions on a computer chip instead of a magnetic stripe. As the card is used for transactions, the amounts are subtracted from a balance on the chip.

When the balance approaches zero, the chip can be “reloaded” through a number of methods. These cards are often used in closed systems for specific types of purchases but do not have to be restrictive. The chip also allows the owner to keep a variety of information with them at all times.

### **BANDWIDTH**

Is the amount of information your connection to the internet can carry on average; typical telephone lines can carry 1k of information per second. It can also be defined as the number of bits processed by a single instruction.

## CHAPTER TWO

### BRIEF OVERVIEW OF E-BANKING

#### 2.1 BRIEF HISTORY OF WEMA BANK NIGERIA PLC (WHO WE ARE)

**Wema Bank Plc** was incorporated in May 1945 as a private limited liability company and commenced business operations as a commercial bank in the same year. The bank was converted to a public limited liability company in April 1987 and was subsequently listed on the floor of the Nigerian Stock Exchange in January 1990.

On February 5, 2001, the Central Bank of Nigeria granted a universal banking License to the Bank, thus allowing the Bank to undertake a wide range of financial services to its numerous customers across the country.

The Bank has witnessed tremendous growth and development in branch network, quality of service delivery and overall financial performance in the last two decades. We have embarked on a process of corporate transformation that has resulted in the emergence of a restructured Wema Bank Plc, strategically positioned to fully optimize opportunities in the industry.

Wema Bank Plc is adequately capitalized, our shareholders' funds is in excess of N25billion and our asset base is N165 billion. Presently, Odu'a investment company limited holds 10% equity stake in the Bank, while private individual investors and staff of the Bank own the remaining 90%.

The authorized share capital of the Bank is N7,000,000,000,00 divided into 14,000,000,000 ordinary shares of 50kobo each. With Banking operations spanning sixty years, Wema Bank Plc is reputed to be the longest surviving indigenous bank in Nigeria. Wema Bank Plc is a customer focused bank. We take delight in learning the intricacies of our customers businesses and preferences, thus our byline "taking you to greater height".

Wema Bank Plc has its branches spread over Nigeria major metropolitan centers such as Abuja, Kaduna, Minna, Maiduguri, Kano, Calabar, Enugu, Benin, Ibadan, Jos, Lagos, Makurdi, Nnewi, Port-Hacourt, Warri, Yenegoa, Yola etc. All the branches are computerized and electronically linked, with the aid of software, which makes it easy for customers to make deposits and withdrawals from any of the bank's locations irrespective of the branch where their account are domiciled.

### **2.1.1 SERVICES OFFERED BY WEMA BANK PLC**

They offer the following services:

1. acceptance of deposit.
2. funds transfer.
3. trade finance overdrafts.
4. overdraft.
5. leases.
6. Dollar Usance finance.
7. Bonds and Guarantees.
8. Foreign exchange payments.
9. Processing of letters of credit on behalf of its customers.

**Acceptance of Deposit:** the bank accepts deposit of cash and or cheques in their customers' account.

**Fund Transfer:** - this is one of the services offered by the bank and it is categorized into two ways namely:

- i. **Internal Transfer:** this is usually made internally with a branch for example, Minna branch in transferring fund from one account to another of the same branch.
- ii. **Mail or Telegraphic Transfer:** this is a kind of transfer that is made mainly from one branch of the bank to the other. For example, from Minna branch to Kaduna branch. This transfer is made through the use of telephone, mail, or computer network.

**Trade finance overdraft:** this is a situation where the bank finance the trade engagement of their customers in consideration of a certain percentage as their income or internet.

**Overdraft:** this is a kind of facility granted by the Bank to its customers to overdraw their account with an approved limit. This is mainly approved for customers to improve their working capital etc.

**Leases:** this is another facility granted by the Bank to its Customers; the bank grant some leasing loans for its customers to acquire some goods which will be repaid after some period of time usually eighteen (18) months.

**Dollar Usance Finance:** - this is a service offered to customers who are engaged in international trade. The bank sourced the dollars on behalf of the customers from Central Bank of Nigeria (CBN).

**Bonds and Guarantee:** this is a situation whereby the bank will issue bonds or Guarantees to stand or guarantee its customers when they are bidding for a contract or to guarantee the worthiness of their customers in case contract default.

**Foreign Exchange Payments:** this service is provided by the bank to customers who wish to travel abroad. The bank usually secures their foreign needs.

**Processing of letters of credits on behalf of its customers:** the bank also engage in processing of letters of credit for their customers to guarantee their imports of goods and services usually for international trade.

Their internet banking is easy to use. All that are needed is a personal computer that is connected to the internet, any browser of his/her choice; Microsoft internet

explorer and Netscape Navigator/ communicator. Open the browser and log on to Wema internet banking website (<http://www.wemabank.com>) and you are banking on-line already.

## **2.2 DEFINITIONS OF E- BANKING**

Electronic banking has numerous definitions. For many customers, electronic banking means 24-hours access to cash through an automated teller machine (ATM) or direct deposit of pay cheques into currents or savings accounts.

Electronic banking also known as electronic fund transfer (EFT) uses computer and electronic technology as a substitute for cheques and other paper transactions. However, some of the definitions of electronic banking on the web are as follows: -

- ✓ Is a form of banking in which funds are transacted through an exchange of electronic signals between financial institutions, rather than an exchange of cash, cheques, or negotiable instruments.
- ✓ Is a banking activity accessed by electronic means.
- ✓ This is a banking services provided direct to the customer electronically e.g. Automated Teller Machines (ATM) tele - banking or voucher-less data carrier exchange.
- ✓ This is financial transaction through the use of computers, telephones, or other electronic means.
- ✓ These are services offered by banks to their private and business customers, using computerized support to record, process and transport data, automatically or without vouchers, and subsequently to make them available once again after suitable preparation (tele-banking).
- ✓ Electronic banking is the use of a computer to retrieve and process banking data such as statements transaction details etc, and to initiate transaction such as payments, transfers, requests for services etc, directly with a bank or other financial service providers remotely via a telecommunications network.

- ✓ Electronic banking is the use of electronic channels to communicate and transact business with both **domestic** and **international customers**, primarily through the use of the **internet** and the **World Wide Web**.

### 2.2.1 TYPES OF E-BANKING

1. Domestic e-banking.
2. Cross-border (international) e-banking

**Domestic e-banking:** provides transactional online banking products or services to residents exclusively in its own domestic market.

**Cross-border e-banking:** - is defined as the provision of transactional machine banking services by a bank in one country to resident in another country.

The BIS (Bank of international settlements) broadly categorizes e-banking, both domestic and international into three categories.

1. Basic information web sites, which only broadcast information on banking products and services, offered to bank customers and general public.
2. Simple transactional websites, which allow bank customers to submit applications for different services, make enquiries about balances and submit instructions to the bank but not permit any account transfers.
3. Advanced transactional websites, that allows bank customers to electronically transfer funds to/from their accounts, pay bills and conduct other banking transactions online.

### 2.2.2 GENERAL SERVICES OF E- BANKING

However, before discussing the services offered by the Electronic Funds Transfer system (EFTs), let us look at how it is been initiated.



Electronic fund transfers are initiated through devices like cards or codes that let one or authorized one access his/her account. Many financial institutions use ATM or debit cards and PINs for this purpose, some use other forms of debit cards such as those that require at most one signature or a scan.

Electronic fund transfer offers several services that customers may find practical.

**1. Automated Teller Machine or 24-hours tellers:** are electronic terminals that let customer(s) bank almost any time.

- ✓ To withdraw cash;
- ✓ Make deposit;
- ✓ Or transfer funds between accounts.

One can generally insert an ATM and enter his/her PIN code. Some financial institutions and ATM owners charge a fee, particularly to customers who don't have account with them or on transactions at remote locations.

Generally, ATMs must tell one a fee charged and its amount on or at the terminal screen before completing his/her transactions.

**2. Direct Deposit:** let us authorize specific deposits, such as pay cheques and social security cheques to our account on a regular basis. We also may pre-authorize direct withdrawals so that recurring bills, such as insurance premiums, mortgages and utility bills are paid automatically.

**3. Pay-by-phone system:** let us call our financial institution with instructions to pay certain bills or to transfer funds between accounts. We must have an agreement with the institution to make such transfers.

**4. PC-Banking:** lets us handle many banking transactions via our personal computer. For instance; we may use our computer to view our accounts balance, request transfers between accounts and pay bills electronically.

5. **Point-of sale transfer:** let us pay for purchases with a debit card, with some important exceptions, while the process is fast and easy, a debit card purchase transfers money-fairly quickly from our bank account to the store's account.
6. **Electronic cheques conversion:** converts a paper cheques into an electronic payment at the point of sale or else where, such as when a company receives our cheques in the mail. In a store, when we give our cheques to a store cashier, the cheques is processed through an electronic system that captures our banking information and the amount of the cheques. Once the cheques are processed, we are asked to sign a receipt authorizing the merchant to present the cheques of our bank electronically and deposit the funds into the merchant's account. we get a receipt of the electronic transaction for our records. When our cheques have been processed and returned to us by the merchant. It should be voided or marked by the merchant so that it can't be used again. In the mail-in situation, we should still receive advance notice from the company that experts to process our cheques electronically.

The Federal Electronic Fund Transfer act (ETFact) covers some electronic customer transaction.

### **2.3 COMPUTER NETWORKS**

A network is a collection of computers or computer like devices that can communicate across a common transmission medium.

In a network, request and data from one computer passes across the transmission medium (which might be a network cable or phone line) to another computer. A computer interacts with the world through one or more applications that perform specific task and manage input and output. If that computer is part of a network, some of those applications must be capable of communicating with applications and other network computers.

Computer networks are classified into three broad categories.

1. Wide Area Network (WAN)
2. Metropolitan Area Network (MAN)
3. Local Area Network (LAN)

### **1. Wide Area Network (WAN)**

These are networks with national and international coverage. These networks are normally implemented by national organizations such as the post, telegraph and telephone (PTT) authorities. Through international agreement between national bodies, interchange of traffic between countries is achieved. Because WAN do interconnect over large distances it is expensive to allocate large amount of bandwidth for each connection or circuit.

A typical circuit parameter in a WAN would be:

- Distance > 10km.
- Bandwidth = 4KHZ-10MHZ.
- Data rate  $10^4$ - $10^6$  BPS.

### **2. Metropolitan Area Network (MAN)**

They are networks, which provide citywide coverage. These networks are owned and operated by publicly regulated bodies.

Typical network parameters for MAN:

- Distance < 20km.
- Bandwidth = 10KHZ-50MHZ.
- Data rate  $10^3$ - $10^7$  BPS.

They are networks that provide coverage on private sites such as an office, building. A manufacturing site or a university campus.

In general, no permission from any public regulatory body is necessary to establish and run such a network.

### **3. Local Area Network:**

Typical network parameters for a local area network.

- Distance < 10km.
- Bandwidth 1-200MHZ.
- Data rate  $10^6$ - $10^8$  BPS.

An illustration of a typical local area network is shown below.

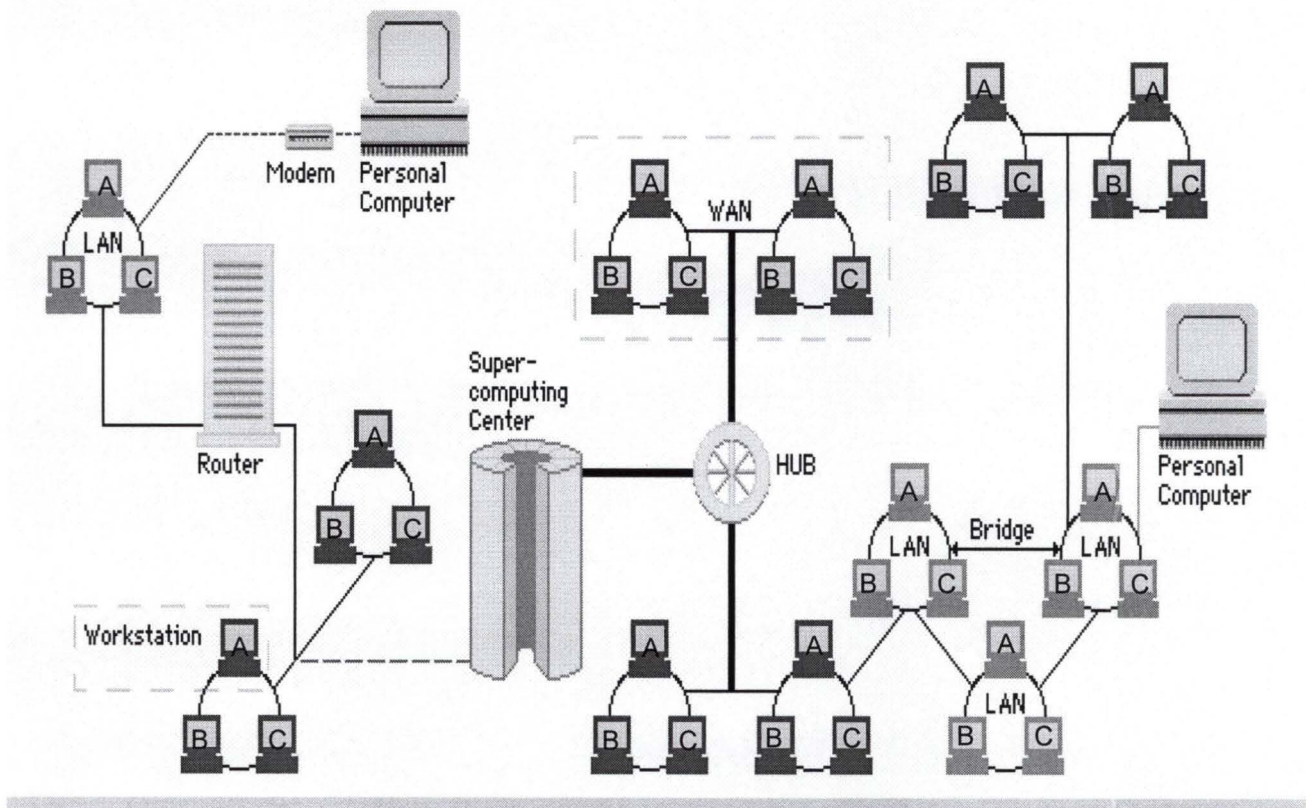


Fig 1

In figure1 above, computer A must be able to send a message or request to computer B. computer B must be able to understand computer A's message and respond to it by sending a message back to computer A.

### Advantages of using Computer Networks.

1. The sharing of resources (e.g computers and staff) and information.
2. The even distribution of work, processing loads e.t.c. it is possible to use data transmission to link two large computers, if any of the two computers

so linked is busy; it can transfer work to the other. This is called “**load sharing**”.

3. The provision of local facilities without the loss or central control.
4. Improvement of more economic communication facilities is general.

## **2.4 INTERNET BANKING RISKS**

Internet banking creates new risk control challenges for national banks. From a supervisory perspective, risk is the potential that events, expected or unexpected, may have an adverse impact on the bank's earnings or capital.

There are nine defined categories of risk for bank supervision purposes. The risks are credit, interest rate, liquidity, price, foreign exchange, transaction, compliance, strategic, and reputation. These categories are not mutually exclusive and all of these risks are associated with Internet banking.

### **Credit Risk**

Credit risk is the risk to earnings or capital arising from an obligor's failure to meet the terms of any contract with the bank or otherwise to perform as agreed. Credit risk is found in all activities where success depends on counterparty, issuer, or borrower performance. It arises any time bank funds are extended, committed, invested, or otherwise exposed through actual or implied contractual agreements, whether on or off the banks balance sheet.

### **Interest Rate Risk**

Interest rate risk is the risk to earnings or capital arising from movements in interest rates. From an economic perspective, a bank focuses on the sensitivity of the value of its assets, liabilities and revenues to changes in interest rates.

Internet banking can attract deposits, loans, and other relationships from a larger pool of possible customers than other forms of marketing. Greater access to customers who primarily seek the best rate or term reinforces the need for

managers to maintain appropriate asset/liability management systems, including the ability to react quickly to changing market conditions.

### **Liquidity Risk**

Liquidity risk is the risk to earnings or capital arising from a bank's inability to meet its obligations when they come due, without incurring unacceptable losses.

Liquidity risk includes the inability to manage unplanned changes in funding sources. Liquidity risk also arises from the failure to recognize or address changes in market conditions affecting the ability of the bank to liquidate assets quickly and with minimal loss in value. Internet banking. Increased monitoring of liquidity and changes in deposits and loans may be warranted depending on the volume and nature of Internet account activities.

### **Price Risk**

Price risk is the risk to earnings or capital arising from changes in the value of traded portfolios of financial instruments. This risk arises from market making, dealing, and position taking in interest rate, foreign exchange, equity, and commodities markets.

Banks may be exposed to price risk if they create or expand deposit brokering, loan sales, or securitization programs as a result of Internet banking activities. Appropriate management systems should be maintained to monitor, measure, and manage price risk if assets are actively traded.

### **Foreign Exchange Risk**

Foreign exchange risk is present when a loan or portfolio of loans is denominated in a foreign currency or is funded by borrowings in another currency. In some cases, banks will enter into multi-currency credit commitments that permit borrowers to select the currency they prefer to use in each rollover period.

Foreign exchange risk can be intensified by political, social, or economic developments. The consequences can be unfavorable if one of the currencies

involved becomes subject to stringent exchange controls or is subject to wide exchange-rate fluctuations.

### **Transaction Risk**

Transaction risk is the current and prospective risk to earnings and capital arising from fraud, error, and the inability to deliver products or services, maintain a competitive position, and manage information. This could include; development and delivery, transaction processing, systems development, computing systems, complexity of products and services, and the internal control environment.

A high level of transaction risk may exist with Internet banking products, particularly if those lines of business are not adequately planned, implemented, and monitored. Banks that offer financial products and services through the Internet must be able to meet their customers' expectations. Banks must also ensure they have the right product mix and capacity to deliver accurate, timely, and reliable services to develop a high level of confidence in their brand name.

### **Compliance Risk**

Compliance risk is the risk to earnings or capital arising from violations of, or nonconformance with, laws, rules, regulations, prescribed practices, or ethical standards. Compliance risk also arises in situations where the laws or rules governing certain bank products or activities of the bank's clients may be ambiguous or untested. Compliance risk exposes the institution to fines, civil money penalties, payment of damages, and the voiding of contracts.

Compliance risk can lead to a diminished reputation, reduced franchise value, limited business opportunities, reduced expansion potential, and lack of contract enforceability.

### **Strategic Risk**

Strategic risk is the current and prospective impact on earnings or capital arising from adverse business decisions, improper implementation of decisions, or lack of responsiveness to industry changes. This risk is a function of the compatibility

of an organization's strategic goals, the business strategies developed to achieve those goals, the resources deployed against these goals, and the quality of implementation. The resources needed to carry out business strategies are both tangible and intangible. They include communication channels, operating systems, delivery networks, and managerial capacities and capabilities. The organization's internal characteristics must be evaluated against the impact of economic, technological, competitive, regulatory, and other environmental changes.

Before introducing an Internet banking product, management should consider whether the product and technology are consistent with tangible business objectives in the bank's strategic plan. The bank also should consider whether adequate expertise and resources are available to identify, monitor, and control risk in the Internet banking business. The planning and decision making process should focus on how a specific business need is met by the Internet banking product, rather than focusing on the product as an independent objective.

### **Reputation Risk**

Reputation risk is the current and prospective impact on earnings and capital arising from negative public opinion. This affects the institution's ability to establish new relationships or services or continue servicing existing relationships. This risk may expose the institution to litigation, financial loss, or a decline in its customer base. Reputation risk exposure is present throughout the organization and includes the responsibility to exercise an abundance of caution in dealing with customers and the community.

A bank's reputation can be damaged by Internet banking services that are poorly executed or otherwise alienate customers and the public. Well designed marketing, including disclosures, is one way to educate potential customers and help limit reputation risk. Customers must understand what they can reasonably expect from a product or service and what special risks and benefits they incur when using the system.



## **Risk Management**

Financial institutions should have a technology risk management process to enable them to identify, measure, monitor, and control their technology risk exposure. Risk management of new technologies has three essential elements:

- ✓ The planning process for the use of the technology.
- ✓ Implementation of the technology.
- ✓ The means to measure and monitor risk.

The objective is to determine whether a bank is operating its Internet banking business in a safe and sound manner. We expect banks to use a rigorous analytic process to identify, measure, monitor, and control risk

**The risk planning process** is the responsibility of the board and senior management. They need to possess the knowledge and skills to manage the bank's use of Internet banking technology and technology-related risks. The board should review, approve, and monitor Internet banking technology-related projects that may have a significant impact on the bank's risk profile. They should determine whether the technology and products are in line with the bank's strategic goals and meet a need in their market. Senior management should have the skills to evaluate the technology employed and risks assumed. Periodic independent evaluations of the Internet banking technology and products by auditors or consultants can help the board and senior management fulfill their responsibilities.

### **Implementing the technology**

is the responsibility of management. Management should have the skills to effectively evaluate Internet banking technologies and products, select the right mix for the bank, and see that they are installed appropriately. If the bank does not have the expertise to fulfill this responsibility internally, it should consider contracting with a vendor who specializes in this type of business or engaging in an alliance with another provider with complementary technologies or expertise.

## **Measuring and monitoring risk**

is the responsibility of management. Management should have the skills to effectively identify, measure, monitor, and control risks associated with Internet banking. The board should receive regular reports on the technologies employed, the risks assumed, and how those risks are managed. Monitoring system performance is a key success factor. As part of the design process, a national bank should include effective quality assurance and audit processes in its Internet banking system. The system should periodically review the systems to determine whether they are meeting the performance standards.

Examiners will need to understand the bank's operational environment to evaluate the proper mix of internal controls and their adequacy. According to the Information Systems Audit and Control Association (ISACA) the basic internal control components include:

- ✓ **Internal accounting controls** — Used to safeguard the assets and reliability of financial records. These would include transaction records and trial balances.
- ✓ **Operational controls** — Used to ensure that business objectives are being met. These would include operating plans and budgets to compare actual against planned performance.
- ✓ **Administrative controls** — Used to ensure operational efficiency and adherence to policies and procedures. These would include periodic internal and external audits.

ISACA separates internal controls into three general categories.

- ✓ **Preventive Controls** — Prevent something (often an error or illegal act) from happening. An example of this type of control is logical access control software that would allow only authorized persons to access a network using a combination of a user ID and password.

- ✓ **Detective Controls** — Identify an action that has occurred. An example would be intrusion detection software that triggers an alert or alarm.
- ✓ **Corrective Controls** — Correct a situation once it has been detected. An example would be software backups that could be used to recover a corrupted file or database.

Banks or service providers offering transaction-based Internet banking products need to have a high level of controls to help manage the bank's transaction risk. Examples of these controls could include:

- ✓ Monitoring transaction activity to look for anomalies in transaction types, transaction volumes, transaction values, and time-of-day presentment.
- ✓ Monitoring log-on violations or attempts to identify patterns of suspect activity including unusual requests, unusual timing, or unusual formats.
- ✓ Using trap and trace techniques to identify the source of the request and match these against known customers.

Regular reporting and review of unusual transactions will help identify:

- ✓ Intrusions by unauthorized parties.
- ✓ Customer input errors.
- ✓ Opportunities for customer education.

## **2.5 THE SECURITY FEATURES OF INTERNET BANKING.**

Generally, regulating Internet banking encompasses three major issues: how bank customers are to be protected; how banks are to be protected; and how the country would be protected against the negative publicity associated with the spread of Internet frauds. Whereas bank customers may be concerned with being able to get Internet banking services at more convenient, speedy, safe and cost efficient way (Awamleh et al. 2003), the concern of banks generally is on how to get the best out of Internet banking in terms of cost efficiency, competitive advantage and enhanced profitability, especially in comparison with the

opportunity cost of similar services and investments in conventional banking system.

Security is an issue in Internet banking systems. we expect national banks to provide a level of logical and physical security to commensurate with the sensitivity of the information and the individual bank's risk tolerance. Some banks allow for direct dial-in access to their systems over a private network while others provide network access through the Internet. Although the publicly accessible Internet generally may be less secure, both types of connections are vulnerable to interception and alteration. For example, hardware or software "snuffers" can obtain passwords, account numbers, credit card numbers, etc. without regard to the means of access. National banks therefore must have a sound system of internal controls to protect against security breaches for all forms of electronic access. A sound system of preventive, detective, and corrective controls will help assure the integrity of the network and the information it handles.

### **Firewalls**

This is frequently used on Internet banking systems as a security measure to protect internal systems and should be considered for any system connected to an outside network. **A firewall** is hardware and software placed between two networks. The intent is for all network traffic, regardless of the direction of flow, to pass through this firewall. The firewall then can check all traffic to make sure it is authorized and prevent unwanted traffic from entering the system. The firewall also can check the traffic to determine whether it contains any unauthorized attachments, such as viruses. Firewalls need to be efficient to catch any traffic that is unauthorized in order to prevent potential harm to the institution.

### **Cryptography**

This provides fundamentals of cryptography and the uses of encryption in banking and electronic commerce since banking business, is shifting from paper based or physical processes to electronic based or digital processes. This includes retail delivery of products and services, electronic data interchange,

wholesale funds transfer, clearing, settlement, and Internet banking. Bank managers will need to engineer sound controls into these new business models to manage risk. While all of this is taking place, the basic needs for data privacy, trust, and verification will continue in the digital world as it has in the physical world. Encryption offers possible solutions.

### Different Kinds of Encryption

Two different kinds of encryption exist with two separate purposes. One purpose is to keep information private. The other is to verify the identity of parties in a transaction. Both kinds of encryption are typically used together to both protect messages and validate the parties involved. Each is governed by industry standards. Vendors provide the encryption technology as software products or as part of specific hardware devices. These two fundamental types of encryption are **symmetric** (secret key cryptography) and **asymmetric** (public/private key cryptography).

There are other logical and physical security controls applicable to internet banking environment.

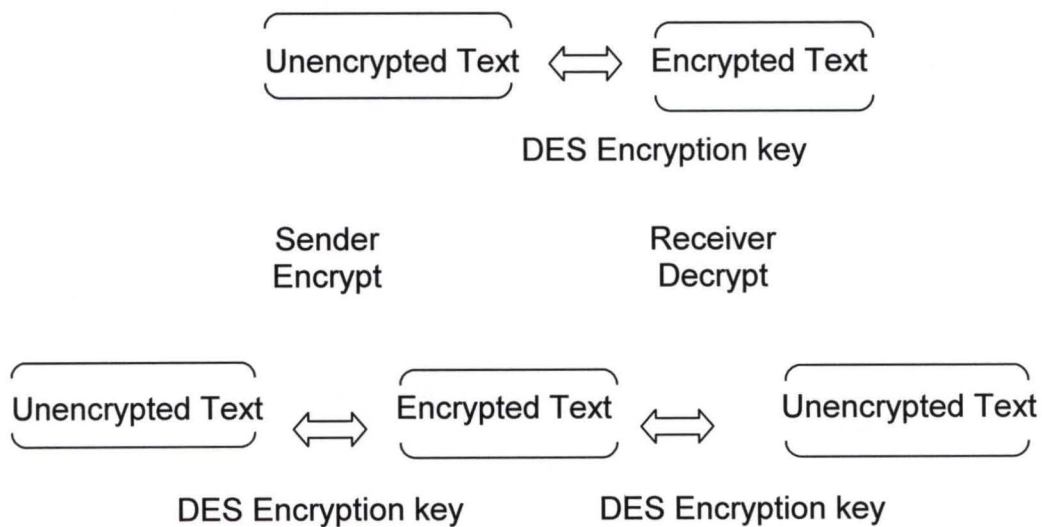


Fig II a

**Privacy** is a consumer issue of increasing importance. National banks that recognize and respond to privacy issues in a proactive way make this a positive attribute for the bank and a benefit for its customers.

**Authentication** is another issue in an Internet banking system. Transactions on the Internet or any other telecommunication network must be secure to achieve a high level of public confidence. Banks typically use symmetric (private key) encryption technology to secure messages and asymmetric (public/private key) cryptography to authenticate persons they are dealing with. Asymmetric cryptography employs two keys; a public key and a private key. These two keys are mathematically tied but one key cannot be deduced from the other. For example, to authenticate that a message came from the sender, the sender encrypts the message using their private key. Only the sender knows the private key. But, once sent, the message can be read only using the sender's public key. Since the message can only be read using the sender's public key, the receiver knows the message came from the expected sender. This is an illustration below.

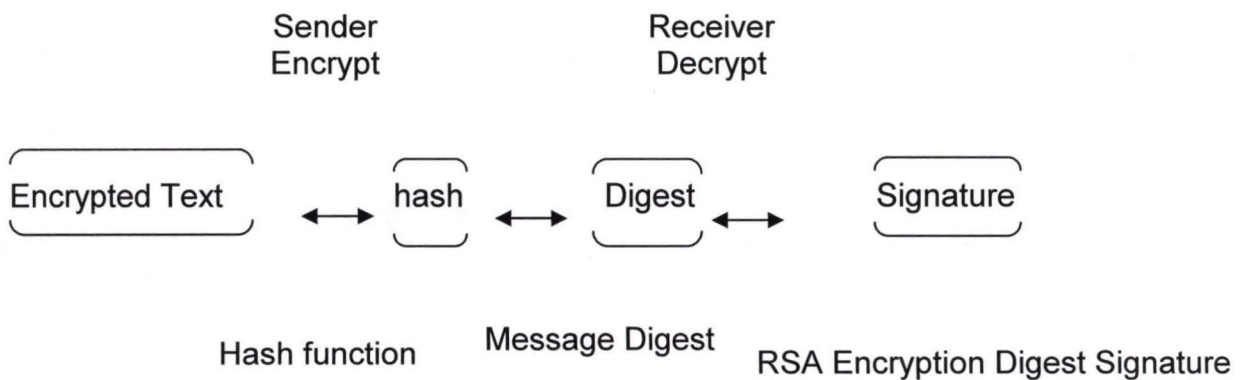


Fig. II b

A common asymmetric cryptography system is RSA, which uses key lengths from 40 bits up to 1,024 bits. By using the two forms of cryptography together, symmetric to protect the message and asymmetric to authenticate the parties involved, banks can secure the message and have a high level of confidence in

the identity of the parties involved. See appendix B of this handbook for examples of how this technology works.

Biometric devices are an advanced form of authentication. These devices may take the form of a retina scan, finger or thumb print scan, facial scan, or voice print scan. Use of biometrics is not yet considered mainstream, but may be used by some banks for authentication.

**Trust** is another issue in Internet banking systems. public and private key cryptographic systems can be used to secure information and authenticate parties in transactions in cyberspace. A trusted third party is a necessary part of the process. That third party is the certificate authority. A certificate authority is a trusted third party that verifies identities in cyberspace. This is similar to the historic role banks have played with letters of credit, where neither the buyer nor seller knew each other but both parties were known to the bank.

**Nonrepudiation** is the undeniable proof of participation by both the sender and receiver in a transaction. It is the reason public key encryption was developed, i.e., to authenticate electronic messages and prevent denial or repudiation by the sender or receiver.

**Availability** is another component in maintaining a high level of public confidence in a network environment. All of the previous components are of little value if the network is not available and convenient to customers. Users of a network expect access to systems 24 hours per day, seven days a week. Among the considerations associated with system availability are capacity, performance monitoring, redundancies, and business resumption.

### **Types of Online Attacks**

Banks and service providers need to guard against various types of online attacks. The object of an attack may vary. Attackers may try to exploit known vulnerabilities in particular operating systems. They also may try repeatedly to

make an unauthorized entry into a Web site during a short time frame thus denying service to other customers.

Types of attacks may include:

- ✓ **Sniffers** — Also known as network monitors, this is software used to capture keystrokes from a particular PC. This software could capture logon IDs and passwords.
- ✓ **Guessing Passwords** — Using software to test all possible combinations to gain entry into a network.
- ✓ **Brute Force** — A technique to capture encrypted messages then using software to break the code and gain access to messages, user ID's, and passwords.
- ✓ **Random Dialing** — this technique is used to dial every number on a known bank telephone exchange. The objective is to find a modem connected to the network. This could then be used as a point of attack.
- ✓ **Social Engineering** — an attacker calls the bank's help desk impersonating an authorized user to gain information about the system including changing passwords.
- ✓ **Trojan Horse** — a programmer can embed code into a system that will allow the programmer or another person unauthorized entrance into the system or network.
- ✓ **Hijacking** — intercepting transmissions then attempting to deduce Comptroller's Handbook 59 Internet Banking information from them. Internet traffic is particularly vulnerable to this threat.



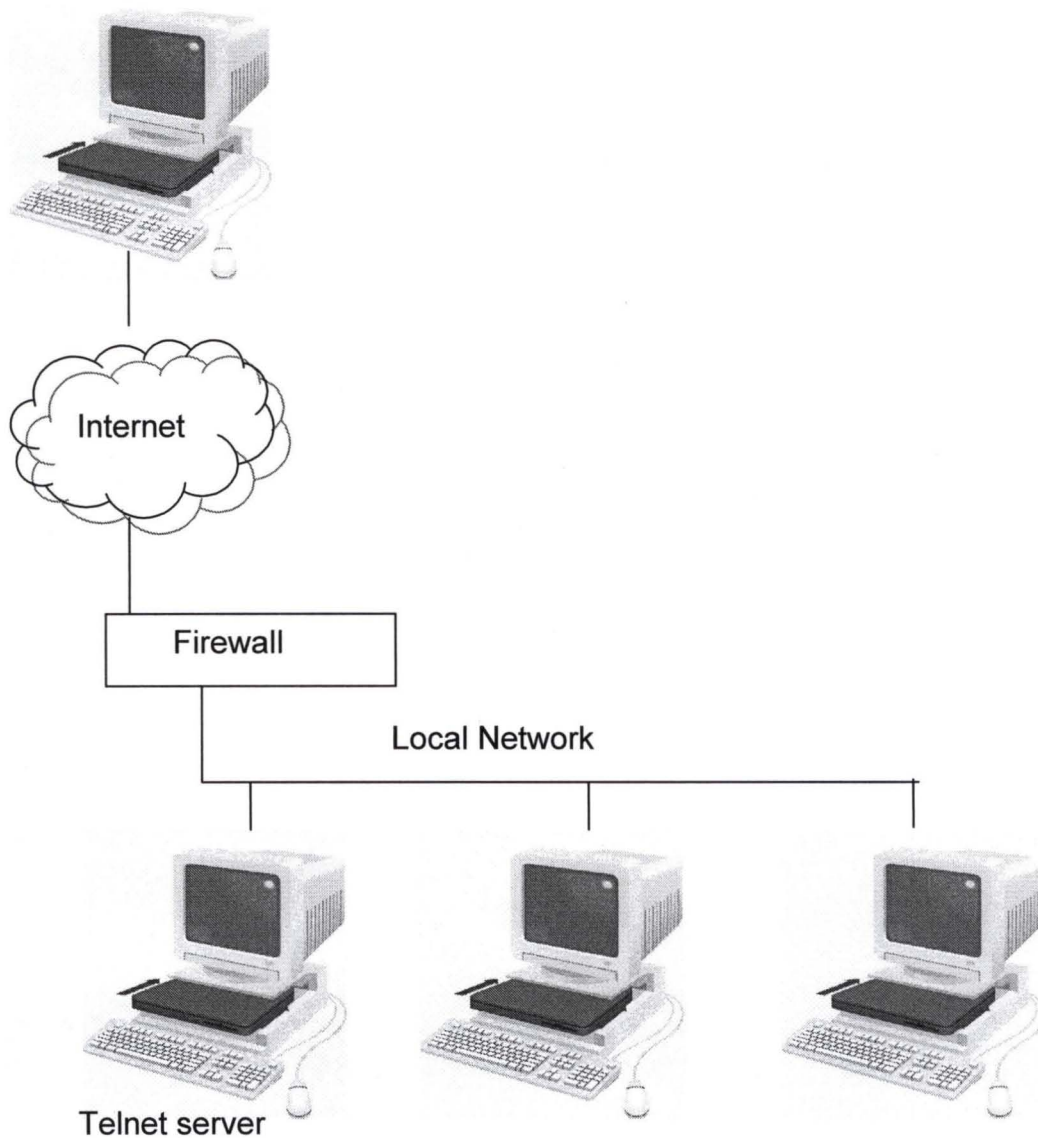


Fig. III

Figure III. Shows how a firewall is used to prevent unauthorized access to information.

Telnet is a utility that lets the client computer serve as terminal for the server.

## CHAPTER THREE

### ANALYSIS AND DESIGN

#### 3.1 INTRODUCTION

Application packages in banking environment are available in both indigenous and foreign products. These packages are simple to implement and run, being entirely menu-driven or Graphic User Interface (GUI). They present on-line assistance facility at any level of operations. Any of the chosen packages is a user friendly product.

The application packages are provided with high level of security module, which offer utility programs to check the data integrity and accuracy and repair damages caused by any bad manipulation. HELP command in any menu allows us to display clearly on screen of the user manual paragraph related to any selected function.

These packages handle the interest computation and produce the entire batch outputs (statement of account, confirmation of balances, journal,.....) and periodical reports (trial balances, balance sheets,....) of the bank. They also ensure the consolidation of transactions forwarded to the head office from their branches and generates all the reports required by central bank.

Banks have to purchase banking application package and the packages have to be customized for the bank, in the sense that it has to reflect the name of the bank, address, logo and also bank policies interest rates on saving on loans and on exchange rate. It has to provide a situation where if a customer brings a cheques or wants to withdraw a huge amount of money, the payment cashier can verify authorization, screen for pay permission either from accountant or manager before payment is made. The packages also need to be customized to suit the purpose the bank wants it for.

Application Software Package to be chosen by banks is dynamic software constantly enhanced due to its operational modularity and its technical flexibility. The package should include customers management which should be based on two main files: the customers identification file; it is the personal data description of the customers identified by unique ID codes used by the system passive data particular to each customer is memorized, such as name, address, phone number, mail code etc. also the customer account file. A customer may have different accounts within the same bank. His identification number is however unique and is the key to his account (whether current or savings account etc).

### **3.2 ANALYSIS OF AN EXISTING SYSTEM**

Any application package is provided with a high level security module which provides the user a hierarchical files, access and program use privileges. They offer utility program to check the data integrity and accuracy and repair damages. Application packages are designed specifically for the following categories of users:

- ✓ Operational / cashier.
- ✓ Responsible operator.
- ✓ Privileges operator.

Each of these categories has a specific function to perform within the system. An operator can only capture data, while a responsible operator assists in inquiries and at the same gives a go-ahead for payment of certain categories of cheques else would not be paid by the cashier.

The privilege operator is responsible for the day to day running of the system and at the same time in charge of handling the following operations:

- ✓ End of day processing.
- ✓ Issuing / withdrawing / passwords.
- ✓ End of month/quarterly processing.
- ✓ End of year utility.

Passwords are issued to the users based on their role within the system by the privilege operator. The system does an on-line validation on all passwords as being supplied by the operator/cashier and at the same time check whether the password has not expired. Therefore, all cases of expiration should be reported to the privilege operator for necessary action.

On-line processing allows the account of customers to be immediately updated as soon as a transaction takes place. This makes is possible during the banking hours. This facility is particularly useful as it ensures that cash deposits and withdrawals are immediately reflected. This on-line process has replaced updating of transaction by batch process. The erroneous posting of customers accounts is virtually eliminated.

The operation of on-line processing in application packages involves the following:

- ✓ Cash analysis.
- ✓ Cheques treatment.
- ✓ Deposit and withdrawals.
- ✓ Clearing.
- ✓ Transfers sent and standing order.
- ✓ Foreign exchange operations.
- ✓ Previous menu. Etc.

### **3.4 ANALYSIS OF THE PROPOSED SYSTEM**

The programming language used for this project is Basic, through Microsoft Visual Basic 6.0 for the source code and Microsoft Access 2003 was used as database. However, Basic is an acronym for Beginners All Purpose Symbolic Instruction Code. It is one of the high level languages whose method of coding and syntax is simplified. It is widely used and very easy to write, debug and run. It is used in various fields like Engineering, business and Scientific.

The access 2003, which is the Database, permits query of the database through Structured Query Language (SQL), and also can manipulate records with high degree of consistency. Using Microsoft access enable one to manage all information from a single database file. Within the file, one can use.

1. Table of store data.
2. Queries to find and retrieve just the required data .
3. Forms to view add and update in table.
4. Reports and analyzes or print data in a specified layout.
5. Data access pages to view, update, or analyze the database's data from the internet or in intranet.

There are various version of BASIC; these are GW-BASIC, (Eagle Basic),Q-BASIC (Quick Basic), TURBO BASIC, ADVANCED BASIC (BASICA) and VISUAL BASIC.

### **3.5 ADVANTAGES OF VISUAL BASIC 6.0 COMPARED TO OTHER VERSIONS OF BASIC.**

Visual Basic 6.0 has some identified new features that make it more flexible, widely used and easy to write, edit and understand.

1. Faster compiler.
2. New Active X data control object.
3. Allows database integration with wide variety of applications.
4. New data report designer.
5. New package and deployment wizard.
6. Additional internet capability.

### 3.6 DESIGN OF THE SYSTEM (FLOWCHART)

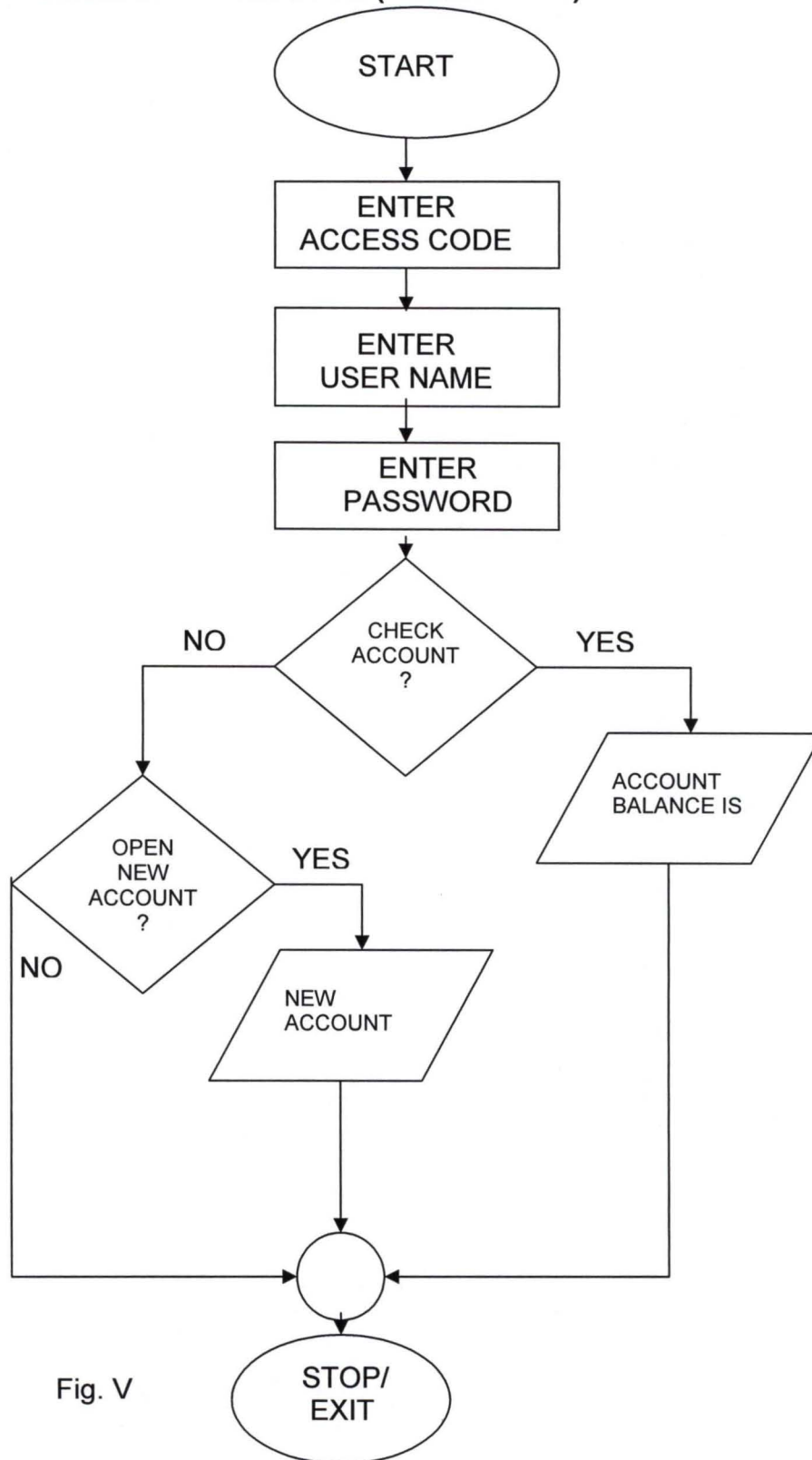


Fig. V

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1 INTRODUCTION

**Definition:** - Visual Basic is a tool that allows one to develop windows (graphic user interface; GUI) applications. These applications have a familiar appearance to the user.

Visual Basic is very event-driven, meaning code remains idle until called upon to respond to some event (button pressing, menu selection. etc). visual Basic is governed by an event processor. Nothing happens until an event is detected. Once an event is detected, the code corresponding to that event (event procedure) is executed. Program control is then returned to the event processor.

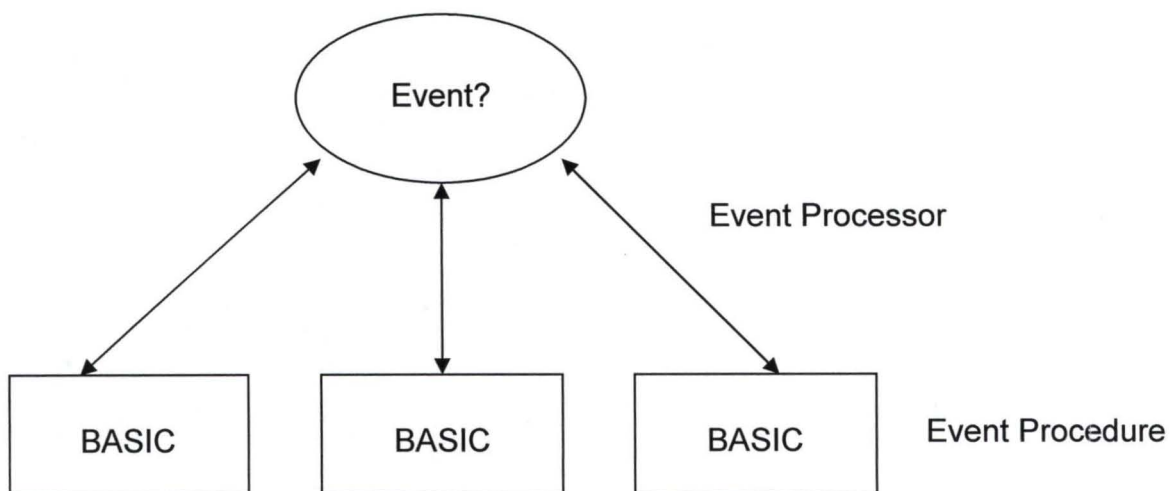


Fig. IV

Visual Basic has certain features that makes it unique programming language.

These features are:

- ✓ Full set of objects:- one draw the application.
- ✓ Lots of icons and pictures for one usage.
- ✓ Response to mouse and keyboard command.
- ✓ Clipboard and printer access.
- ✓ Full array of mathematical, string handling and graphic functions.
- ✓ Can handle fixed and dynamic variables and control arrays.
- ✓ Sequential and random access file support.
- ✓ Useful debugger and error-handling facilities.
- ✓ Powerful database access tools.
- ✓ Active X support.
- ✓ Package and deployment wizard makes distributing application simple.

## **4.2 REGISTRATION OF CUSTOMERS TEMPLATE**

### **NEW ACCOUNT**

In this window (Fig. VIII), only the Bank staff is allowed to register new customers data into the databank. This is clearly done for security purpose. New Account option enables a new customer of the bank data to be entered into the program and for changes to be made in the database as shown in Fig. VIII below.



Registration of New Account

Please fill in all info.

Access Code	User Name	Password
1000	Danladi Gabriel	dgry

Sex	male	Religion	Christian	Age	38
-----	------	----------	-----------	-----	----

Fill Account Details

Account Number	1000002333		
Account Name	current		
Debit	\$20,000.00	Debit Date	4/1/2008
Credit	\$30,000.00	Credit Date	2/10/2007
Balance	\$10,000.00	Date	2/1/2008
local branch	<input checked="" type="checkbox"/>		

Ok Delete Record Close

### 4.3 CHECKING OF ACCOUNT BALANCE TEMPLATE

#### CHECKING ACCOUNT

This is a window solely for checking of an account although modifications are possible by a Wema Bank customer who partake Wemview. A customer is expected to enter his/her Access Code, user name and password and click on Ok. After that, other information window will appear. Fig. VII below shows the information of **Idris Sa'idu** account.

Checking of Account Balance

Please fill all info.

Access Code	User Name	Password
1023	Idris Sa'idu	gwagwa

Sex	male	Religion	Islam	Age	27
-----	------	----------	-------	-----	----

Account Number	1000002345		
Account Name	savings		
Debit	\$2,000.00	Debit Date	2/4/2008
Credit	\$12,000.00	Credit Date	12/3/2008
Balance	\$10,000.00	Date	2/4/2008
local branch	<input checked="" type="checkbox"/>		

Accept    Reset    Close

#### 4.2.1 DATABASE BANK

Without the database bank, no customer can receive information or details about the status of his/her account. The database bank holds all the data of the bank.

The database should be flexible enough to allow for modifications where necessary. Microsoft Access is used to design the database as mentioned earlier. Fig. IX shows the sample of the database bank.

Account Table : Table														
Access	User Name	Passwo	Account Num	Account T	Debit	Debit C	Credit	Credit	Balance	local	Date	Sex	Religion	Age
1000	Danladi Gabriel	dgry	1000002333	current	\$20,000.00	1/2008	\$30,000.00	0/2007	\$10,000.00	<input checked="" type="checkbox"/>	1/2008	male	Christian	38
1001	Abdullahi Saliu Mus	kuttaa	1000002222	current	\$2,000.00	3/2008	\$16,000.00	4/2008	\$14,000.00	<input checked="" type="checkbox"/>	3/2008	male	Islam	26
1002	Richeal Baba Tunde	ribatu	1000002323	savings	\$10,000.00	1/2008	\$50,000.00	6/2007	\$40,000.00	<input checked="" type="checkbox"/>	5/2008	female	Christian	32
1023	Idris Sa'idu	gwagwa	1000002345	savings	\$2,000.00	4/2008	\$12,000.00	3/2008	\$10,000.00	<input checked="" type="checkbox"/>	4/2008	male	Islam	27
1030	Gabriel Ebeneza	geza	1000002221	current	\$100,000.00	2/2008	\$200,000.00	3/2008	\$100,000.00	<input checked="" type="checkbox"/>	3/2008	male	Christian	47
1032	Abubakar Ahmaed	ahbbu	1000003451	savings	\$18,000.00	2/2008	\$20,000.00	2/2008	\$2,000.00	<input checked="" type="checkbox"/>	2/2008	male	Islam	57
1102	Jamila Usman	mijau	1000002347	current	\$1,000.00	2/2008	\$10,000.00	1/2008	\$9,000.00	<input checked="" type="checkbox"/>	2/2008	Female	Islam	27
1103	GraceNdama	mannu	1000002348	current	\$3,000.00	1/2008	\$5,000.00	2/2007	\$3,000.00	<input checked="" type="checkbox"/>	1/2008	female	Christian	38
1105	Rabiyat Aliyu Abubak	rabuu	1000002234	savings	\$100,000.00	1/2008	\$200,000.00	2/2007	\$100,000.00	<input checked="" type="checkbox"/>	1/2008	female	Islam	60
1122	Hassan Imam	hamas	1000002233	savings	\$150,000.00	3/2008	\$300,000.00	2/2008	\$150,000.00	<input checked="" type="checkbox"/>	3/2008	male	Islam	30
1201	Jummai Ahmed	iyosa	1000023677	current	\$10,000.00	2/2008	\$40,000.00	1/2008	\$30,000.00	<input checked="" type="checkbox"/>	2/2008	female	Islam	34
1209	Mohammed Sani	mosan	1000003324	savings	\$7,000.00	1/2008	\$9,000.00	6/2007	\$2,000.00	<input checked="" type="checkbox"/>	1/2008	Male	Islam	31
1222	Aishat Bello Minna	abemi	1000002222	current	\$11,500.00	1/2007	\$19,500.00	6/2007	\$8,000.00	<input checked="" type="checkbox"/>	1/2007	female	Islam	29
1311	Stella Richard	seri	1000002332	savings	\$2,000.00	3/2008	\$3,000.00	6/2007	\$1,000.00	<input type="checkbox"/>	3/2008	female	Christian	32
2002	Peace Amaka	peka	1000002332	savings	\$7,000.00	3/2008	\$10,000.00	6/2007	\$3,000.00	<input type="checkbox"/>	3/2008	female	Christian	51
2010	Juliana Augustine	jugus	1000002231	savings	\$2,000.00	3/2008	\$5,000.00	2/2008	\$3,000.00	<input type="checkbox"/>	3/2008	female	Christian	26
2011	Kabiru Audu	damop	1000002332	current	\$4,000.00	4/2008	\$8,000.00	5/2007	\$4,000.00	<input checked="" type="checkbox"/>	4/2008	male	Islam	28
2110	Ikechi Ugochukwu	kechi	1000002331	savings	\$1,000.00	3/2008	\$10,000.00	2/2008	\$9,000.00	<input type="checkbox"/>	3/2008	female	Christian	66
2111	Hasana Sani	hali	1000002312	savings	\$2,000.00	3/2008	\$7,000.00	6/2007	\$9,000.00	<input type="checkbox"/>	3/2008	female	Islam	31
2120	Stephen Raymond	sray	1000003322	savings	\$7,000.00	3/2008	\$150,000.00	2/2008	\$80,000.00	<input type="checkbox"/>	3/2008	male	Christian	28
2201	Yohanna A. Gaya	ggaya	1000002453	savings	\$9,200.00	1/2008	\$10,200.00	1/2008	\$1,000.00	<input checked="" type="checkbox"/>	2/2008	male	Christian	37
2210	Godwin Peter	pego	1000003332	savings	\$150,000.00	3/2008	\$200,000.00	2/2008	\$50,000.00	<input type="checkbox"/>	3/2008	male	Christian	27
2220	Kunle Kayode	kuyo	1000003321	savings	\$3,000.00	3/2008	\$4,000.00	6/2007	\$1,000.00	<input type="checkbox"/>	3/2008	male	Christian	29
2333	Jimoke Austine	jitin	1000003212	savings	\$3,000.00	3/2008	\$7,000.00	2/2008	\$4,000.00	<input type="checkbox"/>	3/2008	female	Christian	29
3010	Gomna Mamman	gomma	1000003113	current	\$7,000.00	3/2008	\$12,000.00	2/2008	\$5,000.00	<input type="checkbox"/>	3/2008	male	Islam	59
3011	Wakili Musa	wasu	1000003111	savings	\$2,500.00	3/2008	\$3,000.00	4/2008	\$500.00	<input type="checkbox"/>	3/2008	male	Islam	48
3310	Ada Kelechi	kele	1000001132	savings	\$20,000.00	3/2008	\$150,000.00	2/2008	\$130,000.00	<input type="checkbox"/>	3/2008	female	Christian	44

#### 4.4 LIST OF CUSTOMERS BY SEX

The figure IX (a) below shows a sample of the extraction of male customers in the bank while figure IX(b) shows a sample of female customers irrespective of their age, religion and account savings type.

This is to show that any collection of data could be sorted out in any category of our choice. This reflects the flexibility of the database bank.

## Male Customers Query Report



Access Code	User Name	Pas	Acc/No	Acc/Name	Debit	it Date	Credit	it Date	Balance	local	Date	Sex	Religio	Age
1023	Idris Sa'idu	gwa	1000002346	savings	\$2,000.00	4/2008	\$12,000.00	3/2008	\$10,000.00	<input checked="" type="checkbox"/>	2/2008	male	Islam	27
1122	Hassan Imam	ham	1000002233	current	\$150,000.00	3/2008	\$300,000.00	2/2008	\$150,000.00	<input checked="" type="checkbox"/>	2/2008	male	Islam	30
1032	Abubakar Ahm	ahbb	1000009461	savings	\$18,000.00	2/2008	\$20,000.00	2/2008	\$2,000.00	<input checked="" type="checkbox"/>	2/2008	male	Islam	51
1209	Mohammed S	mos	1000003324	savings	\$7,000.00	1/2008	\$9,000.00	3/2007	\$2,000.00	<input checked="" type="checkbox"/>	2/2008	Male	Islam	31
2011	Kabiru Audu	dam	1000002332	current	\$4,000.00	4/2008	\$8,000.00	5/2007	\$4,000.00	<input checked="" type="checkbox"/>	2/2008	male	Islam	28
2201	Yohanna A. G	ggay	1000002463	savings	\$9,200.00	2/2008	\$10,200.00	1/2008	\$1,000.00	<input checked="" type="checkbox"/>	2/2008	male	Christi	37
1001	Abdullahi Salih	kutta	1000002222	savings	\$2,000.00	3/2008	\$16,000.00	4/2008	\$14,000.00	<input checked="" type="checkbox"/>	2/2008	male	Islam	26
1000	Danladi Gabriele	dgry	1000002333	current	\$20,000.00	1/2008	\$30,000.00	3/2007	\$10,000.00	<input checked="" type="checkbox"/>	2/2008	male	Christi	38
2120	Stephen Raym	stray	1000003322	savings	\$7,000.00	3/2008	\$150,000.00	2/2008	\$80,000.00	<input type="checkbox"/>	2/2008	male	Christi	28
2210	Godwin Peter	pego	1000003332	current	\$150,000.00	3/2008	\$200,000.00	2/2008	\$50,000.00	<input type="checkbox"/>	2/2008	male	Christi	27
2220	Kunle Kayode	kuyo	1000003321	savings	\$3,000.00	3/2008	\$4,000.00	5/2007	\$1,000.00	<input type="checkbox"/>	2/2008	male	Christi	29
3010	Gomna Mamm	gom	1000003113	current	\$7,000.00	3/2008	\$12,000.00	2/2008	\$5,000.00	<input type="checkbox"/>	2/2008	male	Islam	46
3011	Wakili Musa	was	1000003111	current	\$2,500.00	3/2008	\$3,000.00	4/2008	\$500.00	<input type="checkbox"/>	2/2008	male	Islam	48
1030	Gabriel Ebene	geza	1000002221	savings	\$100,000.00	2/2008	\$200,000.00	3/2008	\$100,000.00	<input checked="" type="checkbox"/>	2/2008	male	Christi	51

Fig. IX (a)

## Female Customers Query Report



Access Code	User Name	Pas	Number	Accoun	Debit	it Date	Credit	it Date	Balance	local	Date	Sex	Religio	Age
1102	Jamila Usman	mija	1000002347	current	1,000.00	2/2008	1,000.00	1/2008	\$9,000.00	<input checked="" type="checkbox"/>	2/2008	Female	Islam	27
1103	GraceNdama	man	1000002348	savings	3,000.00	1/2008	1,000.00	2/2007	\$3,000.00	<input checked="" type="checkbox"/>	1/2008	female	Christi	38
1105	Rabiyat Aliyu	rabu	1000002234	savings	0,000.00	1/2008	1,000.00	2/2007	100,000.00	<input checked="" type="checkbox"/>	1/2008	female	Islam	45
1222	Aishat Bello M	abe	1000002222	savings	1,500.00	1/2007	1,500.00	1/2007	\$8,000.00	<input checked="" type="checkbox"/>	1/2007	female	Islam	29
1201	Jummai Ahme	iyos	1000023677	current	0,000.00	2/2008	1,000.00	1/2008	\$30,000.00	<input checked="" type="checkbox"/>	2/2008	female	Islam	34
2010	Juliana August	jugu	1000002231	savings	2,000.00	3/2008	1,000.00	2/2008	\$3,000.00	<input type="checkbox"/>	3/2008	female	Christi	26
2110	kechi Ugochu	kech	1000002331	savings	1,000.00	3/2008	1,000.00	2/2008	\$9,000.00	<input type="checkbox"/>	3/2008	female	Christi	27
2002	Peace Amaka	peka	1000002332	savings	7,000.00	3/2008	1,000.00	6/2007	\$3,000.00	<input type="checkbox"/>	3/2008	female	Christi	31
1002	Richea Baba	ribat	1000002323	current	0,000.00	1/2008	1,000.00	6/2007	\$40,000.00	<input checked="" type="checkbox"/>	5/2008	female	Christi	32
2333	Jimoke Austin	jilin	1000003212	savings	3,000.00	3/2008	1,000.00	2/2008	\$4,000.00	<input type="checkbox"/>	3/2008	female	Christi	29
3310	Ada Kelechi	kele	1000001132	savings	0,000.00	3/2008	1,000.00	2/2008	130,000.00	<input type="checkbox"/>	3/2008	female	Christi	41
1311	Stella Richard	seri	1000002332	current	2,000.00	3/2008	1,000.00	6/2007	\$1,000.00	<input type="checkbox"/>	3/2008	female	Christi	32
2111	Hasana Sani	hali	1000002312	current	2,000.00	3/2008	1,000.00	6/2007	\$9,000.00	<input type="checkbox"/>	3/2008	female	Islam	31

Fig. IX (b).

From the tables above, it has shown that in fig. X(a) and fig. X(b) that; the female customers are less than male customers banking with Wema bank Plc, this could be that the male are more gainfully employed than the female which has consequently increase their income and also encouraging their banking potentials.

#### 4.5 LIST OF CUSTOMERS BY RELIGION

Fig. X (a) and Fig. X (b) below gives us sample of Muslim customers and Christian customers in Wema bank Plc. From the survey, the conclusion was not drawn on whether the Muslim customers are more than the Christian customers or vice vassal. This is because the state is what we could call 40-60 religion state.

#### Muslim Customers Query Report

s Code	User Name	Pass	Acc/No.	Acc/ Name	Debit	bit Date	Credit	Credit Date	Balance	local b	Date	Sex	Religio	Age
1023	Idris Sakhu	gwag	1000002345	savings	1,000.00	1/4/2008	.000.00	2/3/2008	\$10,000.00	<input checked="" type="checkbox"/>	4/2/008	male	Islam	27
1102	Famih Usman	mijau	1000002347	current	1,000.00	2/2/2008	.000.00	2/1/2008	\$9,000.00	<input checked="" type="checkbox"/>	2/2/008	fema	Islam	27
1105	Rabiyat Ahiyu A	rabuu	1000002234	savings	1,000.00	1/1/2008	.000.00	2/2/2007	\$100,000.00	<input checked="" type="checkbox"/>	1/2/008	femal	Islam	45
1122	Hassan Imam	hamas	1000002233	current	1,000.00	1/5/2008	.000.00	1/2/2008	\$150,000.00	<input checked="" type="checkbox"/>	3/2/008	male	Islam	30
1222	Akint Bello Mi	abemi	1000002222	savings	1,500.00	11/2/007	.500.00	2/6/2007	\$8,000.00	<input checked="" type="checkbox"/>	11/2/007	femal	Islam	29
1032	Abubakar Alma	ahbbu	1000003451	savings	3,000.00	1/2/2008	.000.00	1/2/2008	\$2,000.00	<input checked="" type="checkbox"/>	2/2/008	male	Islam	51
1209	Mohammed San	mosan	1000003324	savings	7,000.00	1/1/2008	.000.00	2/6/2007	\$2,000.00	<input checked="" type="checkbox"/>	1/2/008	Male	Islam	31
2011	Kabiru Aduki	damop	1000002332	current	1,000.00	1/4/2008	.000.00	1/5/2007	\$4,000.00	<input checked="" type="checkbox"/>	4/2/008	male	Islam	28
1001	Abdullahi Salih	kutaa	1000002222	savings	1,000.00	1/5/2008	.000.00	1/4/2008	\$14,000.00	<input checked="" type="checkbox"/>	3/2/008	male	Islam	26
1201	Ammani Ahmad	iyosa	1000023677	current	1,000.00	2/2/2008	.000.00	2/1/2008	\$30,000.00	<input checked="" type="checkbox"/>	2/2/008	femal	Islam	34
3010	Gonaa Mamma	gamm	1000003113	current	7,000.00	1/5/2008	.000.00	1/2/2008	\$5,000.00	<input type="checkbox"/>	3/2/008	male	Islam	46
3011	Wahidi Musa	wasu	1000003111	current	1,500.00	1/5/2008	.000.00	1/4/2008	\$500.00	<input type="checkbox"/>	3/2/008	male	Islam	48
2111	Hsana Sami	hah	1000002312	current	1,000.00	1/5/2008	.000.00	2/6/2007	\$9,000.00	<input type="checkbox"/>	3/2/008	femal	Islam	31

Fig. X (a)

#### Christian Customers Query Report

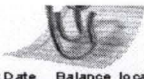
s Code	User Name	Pass	Acc/No.	Acc/Name	Debit	bit Date	Credit	Credit Date	Balance	local b	Date	Sex	Religio	Age
1103	Grace Nwama	manru	1000002348	savings	\$3,000.00	1/2/008	\$5,000.00	3/2/2007	\$3,000.00	<input checked="" type="checkbox"/>	1/2/008	femal	Christian	38
2201	Yohanna A. Gey	ggoya	1000002453	savings	\$9,200.00	2/2/008	\$10,200.00	4/1/2008	\$1,000.00	<input checked="" type="checkbox"/>	2/2/008	male	Christian	37
1000	Danladi Gabriel	dgray	1000002333	current	\$20,000.00	1/2/008	\$30,000.00	1/10/2007	\$10,000.00	<input checked="" type="checkbox"/>	1/1/2008	male	Christian	38
2120	Stephen Raymo	sray	1000003322	savings	\$7,000.00	3/2/008	150,000.00	1/2/2008	\$80,000.00	<input type="checkbox"/>	1/5/2008	male	Christian	28
2210	Godwin Peter	pegp	1000003332	current	150,000.00	3/2/008	200,000.00	1/2/2008	\$30,000.00	<input type="checkbox"/>	1/5/2008	male	Christian	27
2010	Juliana Augustin	jugas	1000002231	savings	\$2,000.00	3/2/008	\$5,000.00	1/2/2008	\$3,000.00	<input type="checkbox"/>	1/5/2008	femal	Christian	26
2110	Ibedi Ugochuk	kedhi	1000002331	savings	\$1,000.00	3/2/008	\$10,000.00	1/2/2008	\$9,000.00	<input type="checkbox"/>	1/5/2008	femal	Christian	27
2220	Kamil Kayode	kruyo	1000003321	savings	\$3,000.00	3/2/008	\$4,000.00	2/6/2007	\$1,000.00	<input type="checkbox"/>	1/5/2008	male	Christian	29
2002	Peace Amala	peka	1000002332	savings	\$7,000.00	3/2/008	\$10,000.00	2/6/2007	\$3,000.00	<input type="checkbox"/>	1/5/2008	femal	Christian	31
1002	Richeal Baba Tu	ribatu	1000002323	current	\$10,000.00	1/2/008	\$50,000.00	2/6/2007	\$40,000.00	<input checked="" type="checkbox"/>	1/5/2008	femal	Christian	32
2333	Jincke Austine	jkhn	1000003212	savings	\$3,000.00	3/2/008	\$7,000.00	1/2/2008	\$4,000.00	<input type="checkbox"/>	1/5/2008	femal	Christian	29
3310	Ada Kelechi	keke	1000001132	savings	\$20,000.00	3/2/008	150,000.00	1/2/2008	\$130,000.00	<input type="checkbox"/>	1/5/2008	femal	Christian	41
1311	Stella Richard	seri	1000002332	current	\$2,000.00	3/2/008	\$3,000.00	2/6/2007	\$1,000.00	<input type="checkbox"/>	1/5/2008	femal	Christian	32
1030	Gabriel Ebenezer	geza	1000002221	savings	100,000.00	2/2/008	200,000.00	1/3/2008	\$100,000.00	<input checked="" type="checkbox"/>	3/2/008	male	Christian	51

Fig. X (b)

## 4.6 LIST OF CUSTOMERS BY ACCOUNT TYPES

Here we extracted a sample of customers with savings account and current account respectively.

### savings Account Query Report




s Code	User Name	Pas	Acc/No	Acc/Name	Debit	itDate	Credit	itDate	Balance local	Date	Sex	Religio	Age
1023	Idris Sa'Idu	gwva	1000002346	savings	\$2,000.00	4/2008	\$12,000.00	3/2008	\$10,000.00	<input checked="" type="checkbox"/>	4/2008	male Islam	27
1105	Rabiyat Aliyu	rabu	1000002234	savings	100,000.00	1/2008	\$200,000.00	2/2007	\$100,000.00	<input checked="" type="checkbox"/>	1/2008	fem Islam	60
1122	Hassan Imam	ham	1000002233	savings	150,000.00	3/2008	\$300,000.00	2/2008	\$150,000.00	<input checked="" type="checkbox"/>	3/2008	male Islam	30
1222	Aishat Bello M	abe	1000002222	savings	\$11,500.00	1/2007	\$19,500.00	3/2007	\$8,000.00	<input checked="" type="checkbox"/>	1/2007	fem Islam	29
1032	Abubakar Ah	ahbb	1000003461	savings	\$18,000.00	2/2008	\$20,000.00	2/2008	\$2,000.00	<input checked="" type="checkbox"/>	2/2008	male Islam	57
1209	Mohammed S	mos	1000003324	savings	\$7,000.00	1/2008	\$9,000.00	3/2007	\$2,000.00	<input checked="" type="checkbox"/>	1/2008	Male Islam	31
2201	Yohanna A. G	ggay	1000002463	savings	\$9,200.00	2/2008	\$10,200.00	1/2008	\$1,000.00	<input checked="" type="checkbox"/>	2/2008	male Christia	37
2120	Stephen Ray	sray	1000003322	savings	\$7,000.00	3/2008	\$150,000.00	2/2008	\$80,000.00	<input type="checkbox"/>	3/2008	male Christia	28
2210	Godwin Peter	pego	1000003332	savings	150,000.00	3/2008	\$200,000.00	2/2008	\$50,000.00	<input type="checkbox"/>	3/2008	male Christia	27
2010	Juliana Augus	juju	1000002231	savings	\$2,000.00	3/2008	\$5,000.00	2/2008	\$3,000.00	<input type="checkbox"/>	3/2008	fem Christia	26
2110	Kechi Ugothu	kech	1000002331	savings	\$1,000.00	3/2008	\$10,000.00	2/2008	\$9,000.00	<input type="checkbox"/>	3/2008	fem Christia	66
2220	Kunle Kayode	kuyo	1000003321	savings	\$3,000.00	3/2008	\$4,000.00	3/2007	\$1,000.00	<input type="checkbox"/>	3/2008	male Christia	29
2002	Peace Amaka	peka	1000002332	savings	\$7,000.00	3/2008	\$10,000.00	3/2007	\$3,000.00	<input type="checkbox"/>	3/2008	fem Christia	51
1002	Richeal Baba	ribat	1000002323	savings	\$10,000.00	1/2008	\$50,000.00	3/2007	\$40,000.00	<input checked="" type="checkbox"/>	5/2008	fem Christia	32
2333	Jimoke Austin	jlin	1000003212	savings	\$3,000.00	3/2008	\$7,000.00	2/2008	\$4,000.00	<input type="checkbox"/>	3/2008	fem Christia	29
3310	Ada Kelechi	kele	1000001132	savings	\$20,000.00	3/2008	\$150,000.00	2/2008	\$130,000.00	<input type="checkbox"/>	3/2008	fem Christia	44

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Fig. XI (a)

### Current Account Query Report



Acess Code	User Name	Pas	Acc/No	Acc/Name	Debit	itDate	Credit	itDate	Balance local	Date	Sex	Religio	Age
1102	Jamila Usman	mija	1000002347	current	\$1,000.00	2/2008	\$10,000.00	1/2008	\$9,000.00	<input checked="" type="checkbox"/>	2/2008	Fem Islam	27
1103	GraceNdama	man	1000002348	current	\$3,000.00	1/2008	\$5,000.00	2/2007	\$3,000.00	<input checked="" type="checkbox"/>	1/2008	fem Christi	38
1122	Hassan Imam	ham	1000002233	current	\$150,000.00	3/2008	\$300,000.00	2/2008	\$150,000.00	<input checked="" type="checkbox"/>	3/2008	male Islam	30
1222	Aishat Bello Min	abe	1000002222	current	\$11,500.00	1/2007	\$19,500.00	3/2007	\$8,000.00	<input checked="" type="checkbox"/>	1/2007	fem Islam	29
2011	Kabiru Audu	dam	1000002332	current	\$4,000.00	4/2008	\$8,000.00	5/2007	\$4,000.00	<input checked="" type="checkbox"/>	4/2008	male Islam	28
1001	Abdullahi Salihu	kutta	1000002222	current	\$2,000.00	3/2008	\$16,000.00	4/2008	\$14,000.00	<input checked="" type="checkbox"/>	3/2008	male Islam	26
1201	Jummai Ahmed	iyos	1000023577	current	\$10,000.00	2/2008	\$40,000.00	1/2008	\$30,000.00	<input checked="" type="checkbox"/>	2/2008	fem Islam	34
1000	Danladi Gabriel	dgry	1000002333	current	\$20,000.00	1/2008	\$30,000.00	3/2007	\$10,000.00	<input checked="" type="checkbox"/>	1/2008	male Christi	38
2120	Stephen Raymo	sray	1000003322	current	\$7,000.00	3/2008	\$150,000.00	2/2008	\$80,000.00	<input type="checkbox"/>	3/2008	male Christi	28
2210	Godwin Peter	pego	1000003332	current	\$150,000.00	3/2008	\$200,000.00	2/2008	\$50,000.00	<input type="checkbox"/>	3/2008	male Christi	27
1002	Richeal Baba Tu	ribat	1000002323	current	\$10,000.00	1/2008	\$50,000.00	3/2007	\$40,000.00	<input checked="" type="checkbox"/>	5/2008	fem Christi	32
1311	Stella Richard	seri	1000002332	current	\$2,000.00	3/2008	\$3,000.00	3/2007	\$1,000.00	<input type="checkbox"/>	3/2008	fem Christi	32
3010	Gomna Mamma	gom	1000003113	current	\$7,000.00	3/2008	\$12,000.00	2/2008	\$5,000.00	<input type="checkbox"/>	3/2008	male Islam	59
3011	Wakili Musa	was	1000003111	current	\$2,500.00	3/2008	\$3,000.00	4/2008	\$500.00	<input type="checkbox"/>	3/2008	male Islam	48
1030	Gabriel Ebeneza	geza	1000002221	current	\$100,000.00	2/2008	\$200,000.00	3/2008	\$100,000.00	<input checked="" type="checkbox"/>	3/2008	male Christi	47
2111	Hasana Sani	hali	1000002312	current	\$2,000.00	3/2008	\$7,000.00	3/2007	\$9,000.00	<input type="checkbox"/>	3/2008	fem Islam	31

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Fig. XI (b)

Fig. XI (a) and Fig. XI (b) respectively have shown that customer with savings account are far less than customers with current account. To day civil servants are made to open current salary accounts with banks to ease their salary payments and business people also enjoy the facilities of current accounts more than savings account.

#### 4.7 LIST OF CUSTOMERS BY AGE

We also extracted a sample of young customers whose ages are or below forty years in Fig. XII (a) and elders whose ages are over forty years. And we discovered that customers whose ages are between forty years banks more than those older than forty years. This could be because those between forty are stronger and more active either in their businesses or at their places of work which could facilitates their income while the older ones might be weak.

#### Age <=40yrs Query Report

Code	User Name	Pas	Acc/No	Acc/Name	Debit t Date	Credit t Date	Balance local	Date	Sex	Religi	Age	
1023	Idris Sa'idu	gwa	1000002345	savings	\$2,000.00 4/2008	\$12,000.00 3/2008	\$10,000.00	<input checked="" type="checkbox"/>	4/2008	male	Islam	27
1102	Jamila Usman	mija	1000002347	current	\$1,000.00 2/2008	\$10,000.00 1/2008	\$9,000.00	<input checked="" type="checkbox"/>	2/2008	Fem	Islam	27
1103	GraceNdama	man	1000002348	savings	\$3,000.00 1/2008	\$5,000.00 2/2007	\$3,000.00	<input checked="" type="checkbox"/>	1/2008	fem	Christi	38
1105	Rabiyat Aliyu	rabu	1000002234	savings	\$100,000.00 1/2008	\$200,000.00 2/2007	\$100,000.00	<input checked="" type="checkbox"/>	1/2008	fem	Islam	40
1122	Hassan Imam	ham	1000002233	current	\$150,000.00 3/2008	\$300,000.00 2/2008	\$150,000.00	<input checked="" type="checkbox"/>	3/2008	male	Islam	30
1222	Aishat Bello Mabe	mabe	1000002222	savings	\$11,500.00 1/2007	\$19,500.00 3/2007	\$8,000.00	<input checked="" type="checkbox"/>	1/2007	fem	Islam	29
1032	Abubakar Ah	ahbb	1000003451	savings	\$18,000.00 2/2008	\$20,000.00 2/2008	\$2,000.00	<input checked="" type="checkbox"/>	2/2008	male	Islam	39
1209	Mohammed S	mos	1000003324	savings	\$7,000.00 1/2008	\$9,000.00 3/2007	\$2,000.00	<input checked="" type="checkbox"/>	1/2008	Male	Islam	31
2011	Kabiru Audu	dam	1000002332	current	\$4,000.00 4/2008	\$8,000.00 5/2007	\$4,000.00	<input checked="" type="checkbox"/>	4/2008	male	Islam	28
2201	Yohanna A. G	ggay	1000002453	savings	\$9,200.00 2/2008	\$10,200.00 1/2008	\$1,000.00	<input checked="" type="checkbox"/>	2/2008	male	Christi	37
1001	Abdullahi Sali	kutta	1000002222	savings	\$2,000.00 3/2008	\$16,000.00 4/2008	\$14,000.00	<input checked="" type="checkbox"/>	3/2008	male	Islam	26
1201	JummaiAhme	iyos	1000023677	current	\$10,000.00 2/2008	\$40,000.00 1/2008	\$30,000.00	<input checked="" type="checkbox"/>	2/2008	fem	Islam	34
1000	Danladi Gabri	dgr	1000002333	current	\$20,000.00 1/2008	\$30,000.00 3/2007	\$10,000.00	<input checked="" type="checkbox"/>	1/2008	male	Christi	38
2120	Stephen Ray	sray	1000003322	savings	\$7,000.00 3/2008	\$150,000.00 2/2008	\$80,000.00	<input type="checkbox"/>	3/2008	male	Christi	28
2210	Godwin Peter	pego	1000003332	current	\$150,000.00 3/2008	\$200,000.00 2/2008	\$50,000.00	<input type="checkbox"/>	3/2008	male	Christi	27
2010	Juliana Augus	ju	1000002231	savings	\$2,000.00 3/2008	\$5,000.00 2/2008	\$3,000.00	<input type="checkbox"/>	3/2008	fem	Christi	28

Fig. XII (a)

#### Age >40yrs Customers Query Report

Code	User Name	Pas	Acc/No	Acc/Name	Debit t Date	Credit t Date	Balance local	Date	Sex	Religio	Age	
1105	Rabiyat Aliyu Abu	rabu	1000002234	savings	\$100,000.00 1/2008	\$200,000.00 2/2007	\$100,000.00	<input checked="" type="checkbox"/>	1/2008	female	Islam	60
1032	Abubakar Ahmae	ahbb	1000003451	savings	\$18,000.00 2/2008	\$20,000.00 2/2008	\$2,000.00	<input checked="" type="checkbox"/>	2/2008	male	Islam	57
2110	kechi Ugochukwu	kech	1000002331	savings	\$1,000.00 3/2008	\$10,000.00 2/2008	\$9,000.00	<input type="checkbox"/>	3/2008	female	Christia	66
2002	Peace Amaka	peka	1000002332	savings	\$7,000.00 3/2008	\$10,000.00 3/2007	\$3,000.00	<input type="checkbox"/>	3/2008	female	Christia	51
3310	Ada Kelechi	kele	1000001132	savings	\$20,000.00 3/2008	\$150,000.00 2/2008	\$130,000.00	<input type="checkbox"/>	3/2008	female	Christia	44
3010	Gonna Mamma	gom	1000003113	current	\$7,000.00 3/2008	\$12,000.00 2/2008	\$5,000.00	<input type="checkbox"/>	3/2008	male	Islam	69
3011	Wakili Musa	was	1000003111	current	\$2,500.00 3/2008	\$3,000.00 4/2008	\$500.00	<input type="checkbox"/>	3/2008	male	Islam	43
1030	Gabriel Ebeneza	geza	1000002221	savings	\$100,000.00 2/2008	\$200,000.00 3/2008	\$100,000.00	<input checked="" type="checkbox"/>	3/2008	male	Christia	47

Fig. XII (b)

## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATIONS

#### 5.1 CONCLUSION

As a result of the growth of the internet, electronic banking has emerged and offering tremendous market potentials for today's businesses .one industry that benefits from this new communication channel is the banking industry. With a wide range of services, customers are able to interact world wide with their banking accounts any time without restrictions.

Moreover, there are many problems associated with this young industry due to imperfection of the security methods. In order to reduce the vulnerabilities regarding the security, many vendors have developed various solutions in both software-based and hardware-based systems.

Generally, for electronic banking to continue to grow, the **security, privacy internet risk control and risk management system** aspects must be improved. These mean that cyber crime transactions law must also be enforced.

#### 5.2 RECOMMENDATIONS

Having viewed the electronic banking system in Nigeria, we found out that there are a lot of lapses which aggravates the inverse relationship, which already exist between a large volume of transaction which are being processed in paper form compared to a much smaller number of very large payment which are processed electronically.

Since banking industry is one of the industries in Nigeria that benefited from this new communication channel, they can take the challenges upon themselves to overcome some of these problems faced. For instance, providing the necessary equipments (computers, ATM machines and security) to enable their customers do proper transactions. These could be made possible by collaborating with



bodies like Central Bank of Nigeria and NIBBS to provide these necessary services to customers

Government is also a vital organ in providing the required infrastructure, especially Electrical Power (NEPA/PHCN) and communication lines (NITEL). The banks must also develop appropriate security features for their sites for example the use of **software-based system** or **hardware-based system** or the both.

In to day's technological world, the payment system demands a strong de-emphasizing of cash as a means of settling transactions as these will greatly reduce the increasing spate of armed robbery in our country. Remembering that, the future is now and belongs to those banks that are bold enough to commit resources and push for change in the system.

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