# FACTORS INFLUENCING THE APPLICATION OF TECHNOLOGY TO ENHANCE EFFICIENCY OF INTERNATIONAL BANKS IN KENYA

**BY:**

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# DECLARATION

This research project is my original work and has not been presented for examination in any other university.

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**D61/70995/2008**

This research project has been submitted for the examination with my approval as the candidate's supervisor.

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# DEDICATION

I dedicate this research project to my late father, Timothy J.B Miriti and my mother Pauline Mukwanjiru Miriti, for teaching me the values of hard work ever since I was a little girl.

To my family members, for their love, my husband, Andrew Kimathi and daughter Jewel Kainyu for their support, patience, encouragement and understanding. They gave me the will and determination to complete my masters and more so an enabling environment.

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# ABSTRACT

The main purpose of this study was to determine factors influencing the application of technology to enhance efficiency of international banks in Kenya. The study arose because of the fast-changing competitive environment, globalization, economic changes, regulation, privatization and the like demands that banks are run efficiently and effectively by continuously engaging in technological innovations. There is a wave of rapidly evolving technology. Technology is changing the face of banking completely. A rapidly evolving business environment is causing the global banking industry to rethink the way it leverages technology. Market growth objectives, the desire to create a globally integrated multi channel environment, and managing the complexity of new products are placing increasing pressure on global banking institutions to move toward a bank of the future paradigm. The transition to this future state requires banks to realign their technology environment and, more importantly, their IT applications portfolio. There is increasing focus on customer centricity. While banks push hard for cashless, branchless future, ultimately it is the consumers who accept or reject the techno heavy banking systems. Banks face serious future strategy challenge. The basic structure of the bank is increasingly in conflict with the changing product delivery, and service needs of the customers. The future belongs to the financial e service providers and not traditional banks. Banks will have to first develop a comprehensive distribution system that will enable customers to touch them at multiple points. Banks must also create performance measurements systems to ensure the mix of products and services they offer are beneficial to both the customer and the bank. They must determine whether to deploy new technologies themselves or with other service providers. Nevertheless, technology will not solve issues or create advantages. This technology needs to be integrated in an organization, with the change management issues linked to people resisting new concept and ideas. Banks will also need to support a clearly defined and well communicated business strategy. Into the future banks technology budgets are expected to continue increasing as newer technologies occupy banking space. But with an economic on recovery, and with regulatory scrutiny more intense than ever, banks IT investments are likely to be focused largely on driving efficiencies and complying with new requirements. IT innovation in banking sector has failed to focus much attention on the impact of these technological innovations to enhancing efficiency of international banks in Kenya. This study adopted survey research design and targeted 13 international banks in Kenya. Both secondary and primary data was used. A statistical package for social sciences (SPSS Version 20.0) was used. From the findings of the study it was concluded that electronic fund transfer, the card system and ATM availability influence technology application in international banks and banking in general which has set the stage for exceptional increase in financial activity across the globe. Thus the study findings recommended that international banks should ensure free flow of information and adequate use of technology in decision making in strategic and tactical planning. International banks should think of creative approaches to ensure that the respectful department has more time to experiment with integrating technology on service delivery and focus on using technology to enhance efficiency rather than the acquisition of infrastructure. This will help to create value networks and counter the challenges.

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| | |
|---|---|
| **ACH** | Automated Clearing House |
| **ATM** | Automated Teller Machine |
| **CRM** | Customer Relationship Management |
| **DIBS** | Diamond Integrated Banking Services |
| **EDP** | Electronic Data Processing |
| **ESCA** | Electronic Smart Card Account |
| **GDP** | Gross domestic Product |
| **ICT** | Information Communication Technology |
| **IT** | Information Technology |
| **MIS** | Management Information System |
| **NPLs** | Non-Performing Loans |
| **SSA** | Sub-Saharan Africa |
| **U.S**. | United States |
| **UK** | United Kingdom |

# CHAPTER ONE: INTRODUCTION

## 1.1Background to the study

Financial services industry over time has opened to historic transformation that can be termed as e-developments which is advancing rapidly in all areas of financial intermediation and financial markets such as e-finance, e-money, electronic banking (e-banking), e-brokering, e-insurance, e-exchanges, and even e-supervision. In recent years, the adoption of e-banking began to occur quite extensively as a channel of distribution for financial services due to rapid advances in IT and intensive competitive banking markets (Mahdi and Mehrdad, 2010; Dube, et. al., 2009). The driving forces behind the rapid transformation of banks are influential changes in the economic environment include among others innovations in information technology, innovations in financial products, liberalization and consolidation of financial markets, deregulation of financial inter-mediation.

The e-banking is transforming the banking and financial industry in terms of the nature of core products /services and the way these are packaged, proposed, delivered and consumed. It is an invaluable and powerful tool driving development, supporting growth, promoting innovation and enhancing competitiveness (Gupta, 2008; Kamel, 2005). The evolution of banking technology has been driven by changes in distribution channels as evidenced by automated teller machine (ATM), Phone- banking, Tele-banking, PC-banking and most recently internet banking (Chang, 2003; Gallup Consulting, 2008). Some key issues addressed in the recent literature about the e-banking include: customer

acceptance and satisfaction, services rendered, value added for consumers and banks, privacy concerns, profitability, operational risks, and competition from non-banking institutions (Boss, et al., 2000). Currently, there are about 8 million users of M-banking services compared to 4 million people who hold accounts in conventional financial institutions in Kenya (CBK, 2008). The tremendous increase in number of people adopting M-banking has been attributed to ease of use and high number of mobile phone users.

### 1.1.1The Concept Technology

Technology can be referred to as the application of knowledge for the execution of a given task. It entails skills and processes necessary for carrying out activities (works) in a given context. ICT encompasses computer systems, telecommunication, networks, and multimedia applications (Frenzel, 1996). It came into use in the late 1980's replacing earlier terms like Electronic Data Processing (EDP), Management Information System (MIS), although the latter terms are still in use (Frenzel, 1996). Joseph and Stone, (2003) point out that, effective service delivery is important and has a great influence on customer satisfaction, improving sales and market share. International banking is at a stage where customer perceptions and preferences have a very important impact on a bank's success. Customer satisfaction is a measure of how products and services supplied by a company meet or surpass customer expectation.

In the effort to deliver effective services, the banking sector undertakes numerous approaches and among them is the innovation and use of information technology. Information technology is a medium that has revolutionized banking and everyday operations at the click of a button thus enabling sophisticated product development, better

market infrastructure, implementation of reliable techniques for control of risks and reaching geographically distant and diversified markets (Marion, 2008).

### 1.1.2 Efficiency

Efficiency is related to the ability to produce a result with minimum effort or resources. It measures how close a production unit gets to its production possibility frontier, which is composed of sets of points that optimally combine inputs in order to produce one unit of output. Following Harker and Zenios (2000), the drivers of bank performance are grouped into three broad categories: strategy, execution of strategy, and environment.

### 1.1.3 Information technology and IT innovations in banking sector

Innovations in information processing, telecommunications, and related technologies – known collectively as "information technology" (IT) – are often credited with helping fuel strong growth in the many economies (Coombs et al, 1987). IT is defined as the modern handling of information by electronic means, which involves its access, storage, processing, transportation or transfer and delivery (Ige, 1995). According to Alu (2002), IT affects financial institutions by easing enquiry, saving time, and improving service delivery. In recent decades, investment in IT by commercial banks has served to streamline operations, improve competitiveness, and increase the variety and quality of services provided. According to Fisher (1998), technology when applied in today's banking environment falls into three specific categories: customer independent (a technology that involves a customer conducting and completing a transaction with a bank entirely independent of any human contact with the institution for example ATMs, phone banking and Internet banking); customer assisted (a bank employee will use customer-assisted technology as a resource to complete a transaction for example call centre's

customer service officers will use a Customer Relationship Management (CRM) System to understand a customer's profile and provide instant responses to customers' queries on the banking transactions and up-to-date billings (Gutek & Welsh, 1999)); and customer transparent Customer technology which represents the real core of bank operations and customers never see it but expect it. If the innovated technology meets the customer expectation, then the customer remains silent. If expectations are not met, however, the customer will be very quick to contact the bank to provide feedback or lodge a complaint. A prime example is the non-receipt of checking account statements. Both the process and technology are transparent to bank customers yet they have such an expectation. For example, if the issue of such statements was delayed by a technical hitch, customers may feel outraged that their normal standard service expectation has not been met.

**1.2 Research Problem**

The fast-changing competitive environment, globalization, economic changes, regulation, privatization and the like demands that banks are run efficiently and effectively by continuously engaging in technological innovations. Emergence of new technologies, products, markets and competitors places demand on any organization to apply any skills necessary to remain competitive and achieve competitive advantage. Every well managed bank to undertake technological innovations which will enable it to have a competitive edge over the others. These innovations are intended to facilitate a firm’s sustainability in the face of growing competition and external threats (Frenzel, C.W. 1996). The information and communication technologies are revolutionizing the banking sector over the years. The rapid development and commercialization of Information and

Communication Technologies (ICTs) banking industry has prompted banks to increasingly adopt these technologies. This is based on the expectation that the new ICT based technologies and processes would lead to an improvement in their operating efficiencies and customer service levels (Dabholkar, P. 1994).

When customers evaluate the quality of the service they receive from banking institution they use different criteria which are likely to differ in their importance, usually some being more important than others. While several criteria are important only a few are most important. These determinant attributes are the ones that will define service quality and hence customer satisfaction from the consumer's perspective (Parasuraman, A.et al., 1999). The banking industry has already been depicted (Parasuman et al., 2001) as exhibiting little market orientation and fulfilling services with little regard to customer needs as well as including branches dissimilar in efficiency. Long lines, limited time for customer servicing, transaction errors, excessive bureaucracy, and security and network failures have been said to be the most frequent problems using banking services (Smith, 1999). This highly lower customer's perception on the quality of service offered and hence reduces customer satisfaction and the bank's profitability and credibility.

As the importance of innovation in developing countries increases, so does the need for research on the subject. Evidence from the literature reviewed above shows that existing discourse on diffusion of IT innovation in banking sector has failed to focus much attention on the impact of these technological innovations to enhancing efficiency of international banks in Kenya. Among other studies include relative importance of technology in service delivery in banking (Adrienneet al., 2003) which concluded that technology provides a different type of value and the benefits to be gained are largely

efficiency based. Mugambi (2006) also attest that researches have been done on areas of service excellence and customer satisfaction in the banking industry. However, there is no study in Kenya that has looked at the factors influencing the application of technology to enhance efficiency with reference of international banks in Kenya. This study therefore, seeks to investigate the relationship between factors influencing the application of technology and efficiency of international banks in Kenya. The research question; what are the factors that influence the application of technology to enhance the efficiency of international banks in Kenya?

### 1.3 Research Objective

The objective of the study is to determine factors influencing the application of technology to enhance efficiency of international banks in Kenya.

### 1.4 Value of the study

The study will be crucial to emerging financial institutions as it will provide answers to the factors influencing the application of technology to enhance efficiency of international banks, prove of the success and growth associated with the application of technology and highlight the areas of banking operations that can be enhanced through technology. It is important to academia, for the purposes of study; this research project is a valuable for business students studying international business or information technology.

It is equally significant for bank executives and indeed the policy makers of the banks and financial institutions to be aware of technology as a product of internet commerce with a view to making strategic decisions.

The study is also expected to give an insight on the state of technology as a competition to the international banks in Kenya and the factors that have greatly influenced its growth. Players in the financial institution sector and telecommunications industry will find the study useful as they can use the findings to strategize on how they can mutually benefit from technology. Finally, our study adds to the existing literature, and is a valuable tool for students, academicians, institutions, corporate managers and individuals who want to learn more about the factors influencing the application of technology to enhancing efficiency.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Introduction

Relevant literature to this research was reviewed form books, journals, websites, magazines and manuals. Also much empirical review will be covered under this section which included literature on Electronic Fund Transfers, The Card System, and ATM Availability. Also a range of theories were covered under theoretical review which included; Theory of information production, contemporary banking theory and Innovation diffusion theory.

## 2.2 Theoretical framework

### 2.2.1 Theory of information production

Diamond (1984) suggested that economic agents may find it worthwhile to produce information about possible investment opportunities if this information is not free; for instance surplus units could incur substantial search costs if they were to seek out borrowers directly. There would be duplication of information production costs if there were no banks as surplus units would incur considerable expenses in seeking out the relevant information before they commit funds to a borrower. Banks enjoy economies of scale and have expertise in processing information related to deficit units (borrowers). They may obtain information upon first contact with borrowers but in real sense it's more likely to be learned over time through repeated dealings with the borrower. As they develop this information they develop a credit rating and become experts in processing information. As a result they have an information advantage and depositors are willing to

place funds with a bank knowing that this will be directed to the appropriate borrowers without the former having to incur information costs.

### 2.2.2 Contemporary banking theory

Bhattacharya and Thakor (1993) contemporary banking theory suggests that banks, together with other financial intermediaries are essential in the allocation of capital in the economy. This theory is centered on information asymmetry, an assumption that "different economic agents possess different pieces of information on relevant economic variables, in that agents will use this information for their own profit" (Freixas and Rochet 1988). Asymmetric information leads to adverse selection and moral hazard problems. Asymmetric information problem that occurs before the transaction occurs and is related to the lack of information about the lenders characteristics is known as adverse selection. Moral hazard takes place after the transaction occurs and is related with incentives by the lenders to behave opportunistically.

### 2.2.3 Innovation diffusion theory

Mahajan and Peterson (1985) defined an innovation as any idea, object or practice that is perceived as new by members of the social system and defined the diffusion of innovation as the process by which the innovation is communicated through certain channels over time among members of social systems. Diffusion of innovation theory attempts to explain and describe the mechanisms of how new inventions in this case internet and mobile banking is adopted and becomes successful Clarke (1995). Sevcik (2004) stated that not all innovations are adopted even if they are good it may take a long time for an innovation to be adopted. He further stated that resistance to change may be a

hindrance to diffusion of innovation although it might not stop the innovation it will slow it down.

Rogers (1995) identified five critical attributes that greatly influence the rate of adoption. These include relative advantage, compatibility, complexity, triability and observability. According to Rogers, the rate of adoption of new innovations will depend on how an organization perceives its relative advantage, compatibility, triability, observability and complexity. If an organization in Kenya observes the benefits of technology they will adopt these innovations given other factors such as the availability of the required tools. Adoption of such innovations will be faster in organizations that have internet access and information technology departments than in organizations without.

### 2.3 Determinants of efficiency

As noted, some variables related to banking technology are integrated into the cost efficiency frontier. To explain efficiency many authors, such as Allen and Rai (1996), use capitalization measured by the book value of stockholder equity as a fraction of total assets and bank size, which is the ratio of one bank's deposits to all banking system deposits. The theory is that bank capitalization could have a significant impact on efficiency. Besides, larger banks take advantage of scale economies through shared costs in the production process.

Another important consideration is bank ownership. Studies of the banking system of developing countries or transition countries always stress the importance of ownership. Foreign-owned banks tend to import good methods and the expertise of parent companies

into the environment where they operate. They also have more financial resources to face specific problems.

Other variables related to the environment affect bank cost-efficiency. GDP per capita (GDP) is one explanatory variable because it affects numerous factors related to demand for and supply of banking services. Countries with higher per capita income have banking systems that operate in a more mature environment, resulting in more competitive interest rates and profit margins. Therefore, GDP per capita is expected to have a negative impact on bank cost and a positive impact on cost efficiency.

Other variables identified in the literature as having a specific impact on developing country bank efficiency are also considered. NPLs, as indicated above, are a key variable used to assess the soundness of the banking system (how well the system is improving its risk management). Bad loans tend to increase bank production costs, reflecting inefficiency in lending. Kirkpatrick, Murinde and Tefula (2008) argue that inefficiency mainly arises from bad loans. The variable is defined as the ratio of NPLs to total loans in each country.

It captures the negative impact of problem loans that SSA banks face. Another variable that can have a specific impact on bank efficiency is the percentage of the population living in rural areas. Banks in developing countries, especially in Africa, tend to be located in towns because most of their customers are city dwellers. Banks in countries with a high share of rural population tend to be less cost-efficient because they cannot realize economies of scale. A positive sign is expected for the coefficient.

## 2.4 Technology and Banks Transformation

Computers are getting more sophisticated. They have given banks a potential they could only dream about and have given bank customers high expectations. The changes that new technologies have brought to banking are enormous in their impact on officers, employees, and customers of banks (Featherman, M.S., & Pavlou, P.A. 2002). Advances in technology are allowing for delivery of banking products and services more conveniently and effectively than ever before thus creating new bases of competition and tremendous value addition. Rapid access to critical information and the ability to act quickly and effectively will distinguish the successful banks of the future (Forrester Research2005). The banks are gaining a vital competitive advantage by having a direct marketing, an accountable customer service environment and new streamlined business processes. Consistent management and decision support systems provide the bank that competitive edge to forge ahead in the banking marketplace, paradigm shift (Graumann, S., & Koehne, B. 2003).

The internet is rapidly becoming the information superhighway of a global electronic marketplace. The rising commercial interests in the internet are especially evident in applications such as electronic catalogs, yellow pages, storefronts, malls and customer support centres (Hung, S.Y., Ku, C.Y., & Chang, C. M. 2003). All these applications are based on the World Wide Web (www) the fastest growing segment of the internet. Though applications such as electronic data interchange (EDI) are equally important, their adoption has not been as rapid (Jaccard, J., Wan, C.K., & Turrisi, R. 1990). One major concern is security, the internet is generally perceived as not secure enough for transmitting sensitive data such as payments. Upon a closer look however, this view is

not warranted since technologies such as public key encryption and firewalls address essential security concerns. Moreover, such technologies are already readily available.

The key to banks survival is customer service. Customer loyalty will be determined by convenient and innovative delivery of products and personalized services (Kim, G., Shin, B., & Lee, H. G. (2009). In the 1970's and 1980's, banks were marketing to a generation raised on old style banking which largely involved personal interaction at a banking office. That generation was disdainful of impersonal service and afraid of computers. Convenience was having a branch in one's neighbourhood. Today, personal service and convenience are still the critical factors in the banking relationship, but they are defined differently. Consumers still want to bank with a financial institution they know and one which knows them, but they do not necessarily want to go to the bank. They are not afraid of computers and technology, they embrace them. Convenience is doing their banking when they want and where they want to. They are now comfortable with personal computers and other electronic devices.

They expect fast, efficient, friendly and accurate service and the only way to cost effectively provide the instant, quality service that customers demand, better than the competition provides is through intensive use of the most advanced information technologies, and through good people trained in the use of these technologies (Kontio, J., Lehtola, L., & Bragge, J. 2004). Client Relationship Management (CRM) systems that escalate and monitor turnaround timelines after clients have logged in enquiries. For all these reasons, the banks delivery systems are completely changing.

## 2.5 How information technology will occupy the banking space

Modern payment systems have transformed both the technology of banking and made possible numerous changes in the strategy and structure of financial services and organisations, including central banks (Mattila, M. 2002). This has led to the convergence of Mobile and Online Technologies. Mobile banking started as a novelty, something only technicians and first adopters felt comfortable using. But as smart phones have skyrocketed in popularity over the past few years, mobile banking adoption has increased along with it. Initially, many banks mobile offerings consisted of their online banking model ported to an i-Phone. As mobile has grown into a maturing channel, banks and their vendor partners have produced richer mobile offerings, that take advantage of its unique capabilities. And the rise of the i-pad tablet gives financial institutions another unique interface through which to interact with consumers.

Automated clearing house, a same day clearing system. Banks will be able to clear cheques, and give value on the same day (Morris, M., & Venkatesh, V. 2000). The Bank automated clearing system (BACS) is a scheme for the electronic transferring of funds from one bank account to another account. Typical Automated Clearing House (ACH) payments include salaries, recurring bill payments, and Social Security benefits insurance premiums, securities, forex deals, and loan repayments.

ACH payments system was designed to allow corporations and consumers to reduce or eliminate the use of paper checks to make routine payments (Parasuraman, A. 2000). The ACH system can process large volumes of individual payments electronically, and it has become the largest payments system in many countries. To date, most of the payments transferred over the ACH have represented recurring credit payments intended for the

accounts of the receivers. A corporation typically creates a computer file of payment instructions and delivers the file to its servicing bank. The servicing bank will debit its customers' accounts and deliver to the ACH an electronic file of all the payment instructions it has received from all of its customers (Dabholkar, P. 1994).

From banking halls to a virtual banking space/ place; banking halls will be transformed into a virtual banking place. They will be reduced into internet based financial institutions that offer deposits and withdrawal facilities, and other banking services, through automated teller machines or other devices, without having a physical brick and mortar walk-in premises. Virtual Banking Systems (VBS) provides solutions to improve the buying experience for prospects and customers of financial institutions. VBS enables banks to convert prospects through need-based evaluation and lead qualification technology (Pedersen, P.E., Methlie, L.B., & Thorbjornsen, H. 2002). It will assist banks in wining new customers and retaining existing customers through improved cross selling opportunities, new customer acquisition and on boarding others. The comprehensive solution of VBS enables banks to plan and execute campaigns, manage and track prospects throughout the life-cycle of lead conversion process.

Through VBS either self-service on the web by prospects or employees of banks can directly interact with prospect or customers in person or on the phone. These tools simulate customer service representative, financial advisors and platform person assisting customers in making decision about financial products (Petrova, K.2004). The system provides objective and educational content guidance allowing prospects to make more informed choices, thereby building trust in their financial institutions. VBS improves

sales through automated value-added advice, product modelling, cross-selling and lead qualification tools that earn the customer's trust by advocating fulfilling customer product's needs. VBS delivers the product as a fully contained solution. VBS empowers consumers with knowledge, builds trusts with prospects and customizes advice to suit consumer's needs. Client relationship management systems: this will allow customers to log enquiries from their office with systems that monitor turnaround timelines and escalate delays (Parasuraman, A. 2000).

### 2.6 Benefits harnessed from technology application in international banks

Every organization, business, industry and government uses technology to convert its inputs into output to attain its organizational objectives, structures and strategic planning processes (Glover R.H, 1993). The quality of strategic planning is limited by the quality of Information and Communication Technology (ICT) available to the decision makers and executive information system. The international banks are not an exception. Technology and more specifically Information and Communication Technology (ICT) are one of the resources needed in the banking sector for effective management. It has significantly improved the ability of the manager to monitor individual or team performance and it has allowed employees to have more complete information to make faster decisions.

Through technology services available to international banks in Kenya, it can now give its customers a unified access to manage their personal financial information. The application of technology by these banks has increased its operational efficiencies, reduced cost through high utilization rates in the ICT environment to ensure compliance with changing time and to gain competitive advantage (Haggani A.B, 2003). Methods of

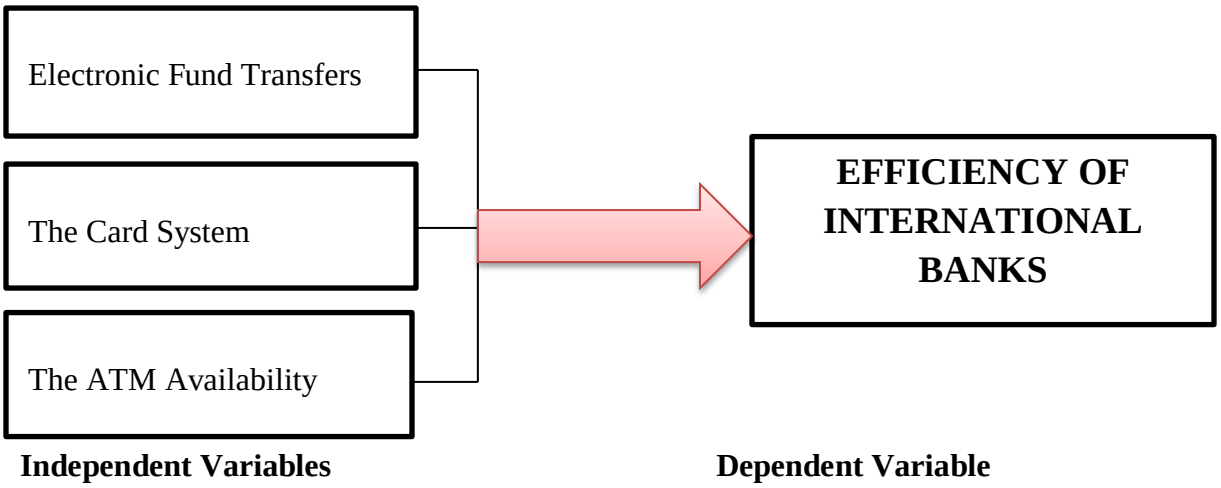
handling financial services has to change from old manual transactions and data processing to a faster, more effective and highly efficient electronic data processing and Electronic Fund Transfer (EFT) that is deposits, withdrawals, bills-pay-in, purchases of draft, value for cheques, third party transactions, fund transfer and inquiries are all done electronically within seconds. The application of technology has also helped international banks to keep the pace with the changing customers' needs and market dynamics and create a competitive differentiation in products and services (Haggani A.B, 2003).

The complex nature of the banking system, its products and services have made it necessary for international banks to embrace this change as quick as possible since this medium of banking has proven to be very efficient in most countries of the world( for example America)and Kenya is no exception. Indeed, the impact of technology has reshaped the banking industry in terms of providing and delivering effective and efficient services to enhance its operations and general performance and does not need to be overemphasized.'

### 2.7 Conceptual Framework

This section assessed the research variables derived from literature to test whether there were significant relationships between the independent variables and the dependent variable. It focused on the determinant variables identified in the study, which would be associated with the efficiency of international banks in Kenya. In this study, the explanatory variables are classified as; electronic fund transfer, card technologies and ATM availability.

**Figure 1: Conceptual Framework**




*Source: Researcher 2014*

### 2.7.1 Electronic Fund Transfers

Electronic Fund Transfers is a system of transferring money from one bank account directly to another without any paper money changing hands. Transactions are processed by the bank through the Automated Clearing House (ACH) network, the secure transfer system that connects all U.S. financial institutions (Khan, S. 2007). For payments, funds are transferred electronically from one bank account to the billing company's bank, usually less than a day after the scheduled payment date. The growing popularity of EFT for online bill payment is paving the way for a paperless universe. The recently launched mobile banking financial transfer system of which service has gone global (M-Pesa) which allows customers from UK to transfer funds to Kenya will also increase the upwards trends in the uptake of EFTs.

### 2.7.2 The Card System

The Card System is a unique electronic payment type. The smart cards are plastic devices with embedded integrated circuit being used for settlement of financial obligations. The power of cards lies in their sophistication and acceptability, to store and manipulate data, and handles multiple applications on one card securely (Amedu, 2005). Uptake of bank cards has gone high, fueling the excitement over branchless banking. Cash withdrawals make up 70 percent of the cash transactions at ATMs at one bank in Kenya.

### 2.7.3 The ATM Availability

Lovelock (2000) identified secure and convenient location, adequate number of ATM, user-friendly system, and functionality of ATM. Davies et al., (1996) identified costs involved in the use of ATM and efficient functioning of ATM. Joseph & Stone, (2003) identified user-friendly, convenient locations, secure positions, and the numbers of ATM provided by the banks as essential factors of ATM service quality. Mobarek (2007) established speed of operation, and waiting time as the important predictors of ATM service quality.

## 2.8Empirical Studies

The purpose of the paper named "Impact of Information Technology management practices on customer service", by Jahangir Karimi, Toni M. Somers and Yash P. Gupta (2002) was to gauge whether IT management practices differ among firms where IT has a major role in transforming marketing, operations, or both, which gave the firms

advantage by affecting customer service. Several research hypotheses were tested using data obtained from a survey of 213 IT-leaders in the financial services industry. The results clearly indicated that the IT leader firms had a higher level of IT management sophistication and a higher role for their IT leaders compared to IT-enabled customer focus, IT-enabled operations focus, and IT-laggard firms. The study concluded that IT management practices differed among IT leader firms, IT-enabled customer focus, IT-enabled operations focus and IT-laggard firms. This paper was silent on other aspects of IT like functional integration, technological integration, et cetera, besides customer service. Sebastian A.P. Titus and Albin D. Robert Lawrence (2004) in their paper titled "Customer Focus in Banking Services" had stressed on importance of customer relationship management. The aim of the banks should be to retain the existing customers and acquire the new customers. In order to add value to the services offered, the banking industry has to efficiently and effectively utilize the technology with an eye on the cost of product and the services offered. To win the customers, the modern banking should integrate technology and deploy marketing strategies that would enable banks to maximize profits through customer satisfaction. In market with fierce competition providing the customers with value addition is the only way to achieve complete sustained customer satisfaction. Joshua Madan Samuel (2003) in his paper titled "CRM – With special emphasis on financial services and banking", emphasized about growing need of managing customers better in banking. CRM applications applied in banking were customer knowledge, sales effectiveness, customer retention, customer segmentation, product presentation, customer fulfillments, customer acquisition, channel management, marketing intelligence, campaign management. The processes need to be

redesigned in order to be able to utilize CRM for the customers and organizational benefits. The three S's of banking i.e., Size, Speed, Service; are better managed by CRM. In the world of banking CRM technology was the answer to the question of increased growth with less cost.

In paper titled "Capturing the customer's voice-A case study in banking" by Bhattacharyya S.K. & Zillur Rahman (2002), customer needs and wants in a bank were properly emphasized. Customer needs were categorized as Basic needs, Performance needs and Excitement needs. The various banking services like Tangibility, Reliability, Competence, Courtesy, Understanding customers, Communication, Access, Responsiveness, Credibility, and Security; were related with these needs. This study helped to identify how customers perceived services of a bank. Agboola (2001) studied the impact of computer automation on the banking services in Lagos and discovered that Electronic Banking has tremendously improved the services of some banks to their customers in Lagos. The study was however restricted to the commercial nerve center of Nigeria and concentrated on only six banks. He made a comparative analysis between the old and new generation banks and discovered variation in the rate of adoption of the automated devices. Aragba-Akpore (1998) wrote on the application of information technology in Nigerian banks and pointed out that IT is becoming the backbone of banks' services regeneration in Nigeria. He cited the Diamond Integrated Banking Services (DIBS) of Diamond Bank Limited and Electronic Smart Card Account (ESCA) of All States Bank Limited as efforts geared towards creating sophistication in the banking sector. Ovia (2000) discovered that banking in Nigeria has increasingly depended on the deployment of Information Technology and that the IT budget for banking is by far larger

than that of any other industry in Nigeria. He contended that On-line system has facilitated Internet banking in Nigeria as evidenced in some of them launching websites. He found also that banks now offer customers the flexibility of operating an account in any branch irrespective of which branch the account is domiciled. Cashless transactions were made possible in our society of today.

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1 Introduction

A research methodology guides the researcher in collecting, analyzing and interpreting observed facts (Bless and Achola, 1988). This chapter introduces the logical framework that was followed in the process of conducting the study. It is divided into: research design, population and sample, data collection and data analysis.

## 3.2 Research Design

According to Mcmillan and Schumaker (2001) a research design is a plan for selecting subjects, research sites and data collection procedures to answer the research questions. It is the conceptual framework within which research is conducted and constitutes the blueprint for the collection of data and the analysis thereof of the collected data. For the sake of this study a survey research design was used. According to Mbwesa (2006), a survey research involves collection of data from a population in order to determine the current status of that population with respect to one or more variables. A survey study seeks to identify some aspects of the population such as opinions, attitudes, believes or even knowledge of a particular phenomenon.

## 3.3 Population and Sample

A population is the 'aggregate of all cases that conform to some designated set of specifications" (Paton, 2002). The populations of the study were 13 international banking institutions in Kenya as per appendix one attached. Since the population size is not large a census survey was conducted where questionnaires was circulated to the entire 13 international banks in Kenya. The head of information and technology (Chief information

officer) of each bank and a non managerial staff will be sent the questionnaire by dropping it in person. Mugenda (2010) observe that a population is an enumeration of all the elements with the desired characteristics, making the universe of the study.

### 3.4 Data Collection

The study used both secondary and primary data. Primary data was obtained from managers of theses international banks in Kenya by the use of questionnaires. In this questionnaire the question is accompanied by a list of all possible attentions from which respondents select the answer that best describe the situation. These questions are easy and quick to answer since there is no extended writing.

### 3.5 Data Analysis

Data analysis involves data preparation where data is checked for accuracy, entered into a computer, examined critically and making inferences, Kombo and Tromp (2006). Immediately the questionnaires are received, they will be checked for accuracy. This was done by checking whether the responses are legible, whether all important questions have been answered and whether the responses are complete.

#### 3.5.1 Analytical Model

The study aimed to establish the effect of technology in efficiency enhancement of international banks. Multiple regression analysis was used. The regression equation to be tested was as follows;

$$EIB = \beta o + \beta 1EFT + \beta 2CS + \beta 3ATMA + \varepsilon i \quad \text{(i)}$$

Where;

EIB = Efficiency of International Banks

EFT = Electronic Fund Transfers

CS = Card System

ATMA = ATM Availability

$\beta 0$ = The constant term

$\varepsilon i$ = The error term

To test the relationship between the variables (Technology and Efficiency of international banks), the study adopted both descriptive and inferential analysis. The inferential statistical procedures used in this study are correlation coefficient (r) and Pearson correlation coefficient. The tests of significance used are regression analysis expected to yield the coefficient of determination (R2), analysis of variance along with the relevant t – tests, f -tests, z – tests and p – values. The choices of these techniques are guided by the variables, sample size and the research design. The inferential statistical techniques was done at 95% confidence level ($\alpha = 0.05$). The data was analyzed using the Statistical Package Social Sciences Software (SPSS version 20.0). Quantitative data was used to present results in form of graphs and tables.

# CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

## 4.1 Introduction

This chapter covers data presentation and analysis. The main objective of the study was to analyze the factors influencing the application of technology to enhance efficiency of international banks in Kenya. In order to simplify the discussions, the researcher provided tables and figures that summarize the collective reactions and views of the respondents.

## 4.2 Response Rate

The sample size of this study was 13 international banks in Kenya. Those filled and returned questionnaires were 11 respondents making a response rate of 84.6 %. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This means that the response rate for this study was excellent and therefore enough for data analysis and interpretation.

## 4.3 Reliability

A reliability test is a method of making the test reliable by pre testing the instrument. Mugenda (2008) noted that pre-testing is essential. This identifies errors found in the study instrument which can later be corrected. Moreover, pre-testing of instruments help to estimate time needed to administer the instrument. The test retest reliability of an instrument is assessed by administering it to the same people on two different occasions and calculating the Cronbach co-oefficient between the scores. The value of the alpha coefficient ranges from 0 to 1 and is used to describe the reliability of factors extracted

from questions with two possible answers, a higher value greater than 0.7 shows that the questionnaire is more reliable. Table 4.1 shows the results of the test of the questionnaire. The coefficients were all greater than 0.7. A conclusion was therefore drawn that the instruments had an acceptable reliability coefficient and were appropriate

**Table 4.1: Reliability test Analysis for the questionnaire**

| **Variable** | **Cronbach's alpha** | **No of items per objective** |
|---|---|---|
| Electronic Fund Transfers | .801 | 8 |
| The Card System | .765 | 6 |
| ATM Availability | .874 | 7 |

*Source: Researcher 2014*

### 4.3 Demographic Information

The study sought to establish the demographic information in order to determine whether it had influence on the application of technology to enhance efficiency of international banks in Kenya. The demographic information of the respondents included gender, length of service, and position held in the organization.

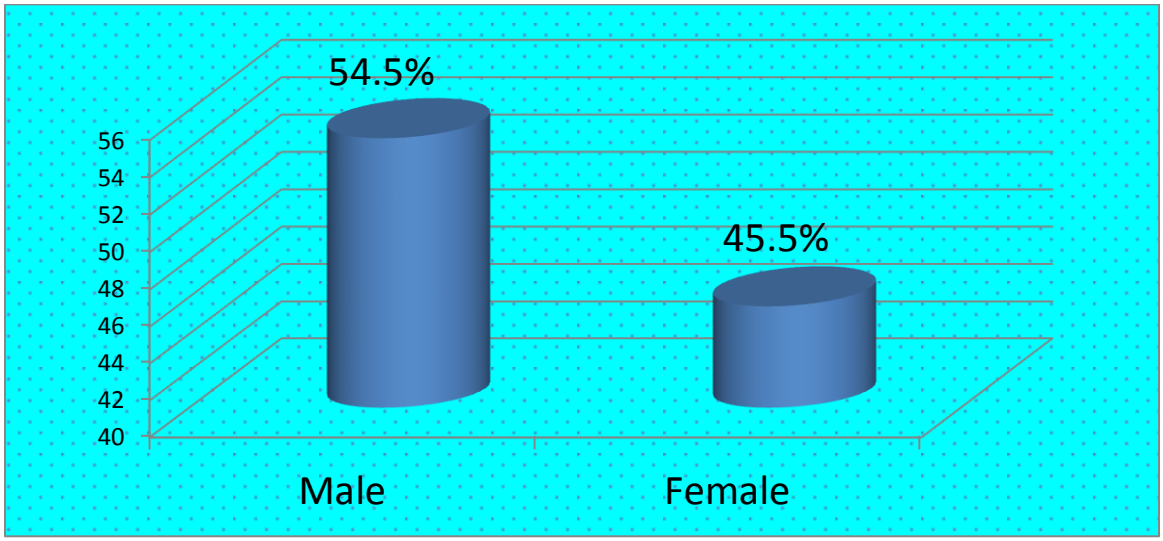
**Table 4.2: Gender of the respondents**

Table 4.1 and figure 2 shows gender of the respondents who participated in the study

| Category | Frequency | Percentage |
|---|---|---|
| Male | 6 | 54.5 |
| Female | 5 | 45.5 |
| **Total** | **11** | **100** |

*Source: Researcher 2014*

**Figure 2: Gender of the respondents**




*Source: Researcher 2014*

According to the analysis of the findings, it emerged that a majority of the respondents were male accounting for 54.5% while the female counterparts were 45.5%. Therefore, it can be inferred that international banks are gender sensitive because the disparity is not wide.

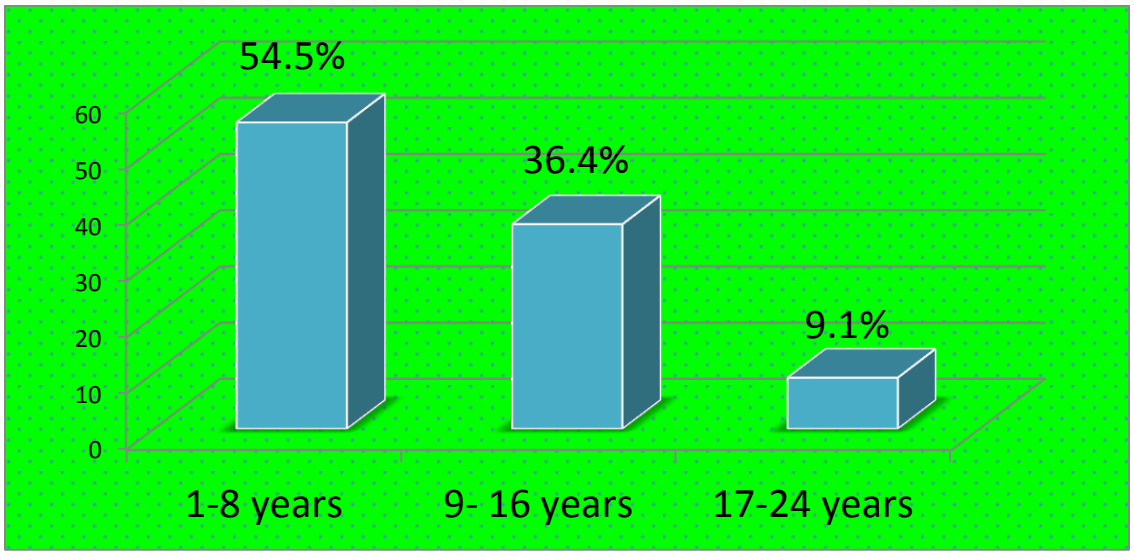
**Table 4.3: Length of Service**

Table 4.2 and figure 3 shows the length of service of the respondents in international banks of Kenya.

| Category | Frequency | Percentage |
|---|---|---|
| 1-8 years | 6 | 54.5 |
| 9- 16 years | 4 | 36.4 |
| 17-24 years | 1 | 9.1 |
| **Total** | **11** | **100** |

*Source: Researcher 2014*

**Figure 3: Length of Service**




*Source: Researcher 2014*

From the findings of the study it emerged that a majority (54.5%) have worked for 1-8 years followed by 36.4% who have worked for 9-16 years and the remaining 9.1% indicated that they have worked for 17-24 years. Therefore, it can be depicted that a majority of the respondents have worked for 1-8 years.

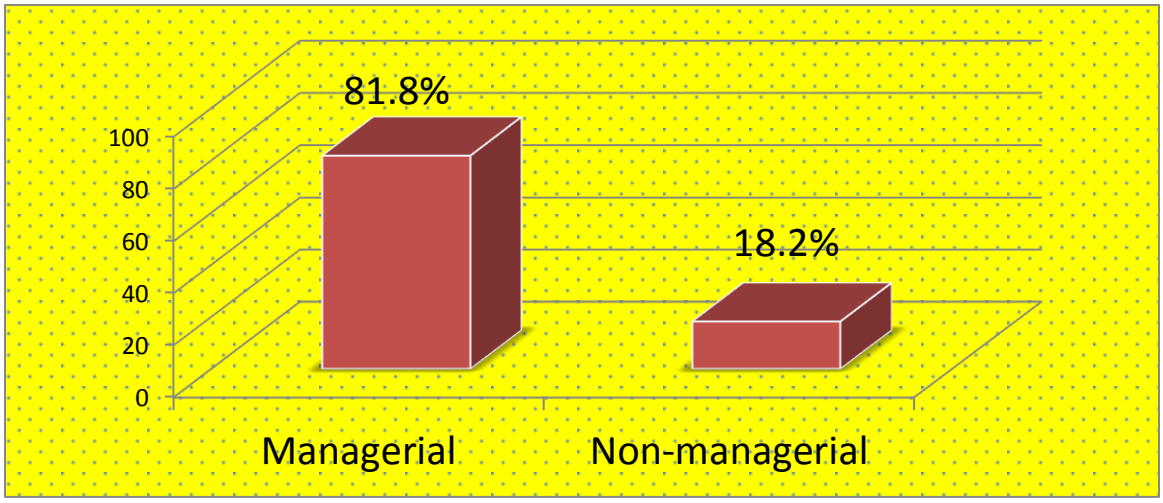
**Table 4.4: Position in the Bank**

Table 4.3 and Figure 4 shows position held in the bank

| Category | Frequency | Percentage |
|---|---|---|
| Managerial | 9 | 81.8 |
| Non-managerial | 2 | 18.2 |
| **Total** | **11** | **100%** |

*Source: Researcher 2014*

**Figure 4: Position in the Organization**




*Source: Researcher 2014*

Based on the findings of the study, it is evident that overwhelming majority (81.8%) interviewed had managerial positions in their respectful banks while the remaining 18.2% were non-managerial staff. This implies that a majority of the respondents were managers thus were equipped to provide information on the factors influencing the application of technology to enhance efficiency of international banks in Kenya.

### 4.4 Factors Influencing the Application of Technology

The respondents were requested to indicate on how electronic fund transfers, the card system, and ATM availability influence the application of technology to enhance

efficiency of international banks in Kenya in a five point Likert scale. The range was 'strongly agrees (5)' strongly disagrees '(1). The scores of 'disagree, 'and' strongly disagree;' have been taken to present a variable which had an impact to a small extent (S.E) (equivalent to mean score of 0 to 2.5 on the continuous Likert scale ;( 0≤ S.E <2.4). The scores of 'undecided;' have been taken to represent a variable that had an impact to a moderate extent (M.E.) (equivalent to a mean score of 2.5 to 3.4 on the continuous Likert scale: 2.5≤M.E. <3.4). The score of 'agree, and strongly agrees,' have been taken to represent a variable which had an impact to a large extent (L.E.) (equivalent to a mean score of 3.5 to 5.4 and on a continuous Likert scale; 3.5≤ L.E. <5.4). A standard deviation of >1.5 implies a significant difference on the impact of the variable among respondents.

### 4.4.1 Electronic Fund Transfers

**Table 4.5: Electronic Fund Transfers**

| Statement | N | Mean | Standard Deviation |
|---|---|---|---|
| Eliminates customary procedures for processing cash payments | 11 | 4.19 | .720 |
| Reduces the risk of robbery by eliminating the amount of cash carried by drivers | 11 | 3.05 | .941 |
| Reduces driver check-in time during reconciliation/settlement | 11 | 3.70 | .594 |
| Reduces the time spent keying data and correcting errors | 11 | 4.93 | .747 |
| Data can be utilized for bank reconciliation | 11 | 4.75 | .927 |
| Allows retailers with multiple locations to track payments for deliveries through one central source | 11 | 5.09 | .826 |
| Electronic processing of invoice data and payment information makes it possible to automatically post data directly to accounting systems | 11 | 4.33 | .928 |

| | | | |
|---|---|---|---|
| Improves consistency of information since a retailer can receive updated information from the bank on payments, rather than trying to reconcile cash register to payments to vendors | 11 | 4.73 | .801 |

*Source: Researcher 2014*

Table 4.4 shows the results on the influence of electronic fund transfers on application of technology to enhancement of efficiency of international banks in Kenya. From the findings of the study those strongly agreed were on that it allows retailers with multiple locations to track payments for deliveries through one central source with a mean of 5.09 and a standard deviation of .826, it reduces the time spent keying data and correcting errors with a mean of 4.93 and a standard deviation .747, data can be utilized for bank reconciliation with a mean of 4.75 and a standard deviation .927 and on improving consistency of information since retailers receive updated information from the bank on payments, rather than trying to reconcile cash register to payments to vendors with a mean of 4.73 with a standard deviation of .801. In addition, those agreed were on electronic processing of invoice data and payment information makes it possible to automatically post data directly to accounting systems with a mean of 4.33 and a standard deviation of .928, eliminating customary procedures for processing cash payments with a mean of 4.19 and a standard deviation of .720 and also it reduces driver check-in time during reconciliation/settlement with a mean of 3.70 and a standard deviation of .594. Further, the findings of the study revealed that those who were to a neutral extent were on EFT reduces the risk of robbery by eliminating the amount of cash carried by drivers with a mean of 3.05 and a standard deviation of .941. Therefore the findings of the study conclude that a majority of the respondents strongly agreed that electronic fund transfer

influences the application of technology which enhances efficiency of international banks in Kenya. This findings is inline with Khan, S. (2007) EFT enables funds to be transferred electronically from one bank account to the billing company's bank, usually less than a day after the scheduled payment date.

### 4.4.2 The Card System

**Table 4.6: The Card System**

| Statement | N | Mean | Standard Deviation |
|---|---|---|---|
| Payment through the card system enables to achieve a higher security level of the credential and the overall access control system. | 11 | 3.79 | 1.053 |
| The card system carries secure IT applications such as secure logon to networks, digital signature, and encryption | 11 | 3.81 | .932 |
| The card system provide more storage and the secure reading and writing of data | 11 | 4.03 | .861 |
| The card system has the capacity to add other applications to the card over proximity technology. | 11 | 3.60 | .699 |
| Through the card system users can define and control their access keys | 11 | 3.62 | .834 |
| The card system technology is affordable. | 11 | 3.04 | .781 |

*Source: Researcher 2014*

Table 4.5 shows the responses on how the card system influences the application of technology to enhancement of efficiency in international banks. According to results, those agreed were on that the card system providing more storage and the secure reading and writing of data with a mean of 4.03 and a standard deviation of .861, the card system carries secure IT applications such as secure logon to networks, digital signature, and

encryption with a mean of 3.81and a standard deviation of .932, payment through the card system enables to achieve a higher security level of the credential and the overall access control system with a mean of 3.79 and a standard deviation of 1.053, through the card system users can define and control their access keys with a mean of 3.62 and a standard deviation of .834, and the card system has the capacity to add other applications to the card over proximity technology with a mean of 3.60 and a standard deviation of .699. In addition, those who were to a neutral extent were that, the card system technology is affordable with a mean of 3.04 and a standard deviation of .781. From the findings of the study, it is concluded that a majority agreed that indeed the card system influences the application of technology to enhancement of efficiency in international banks of Kenya. The findings of the study is in consistent with Amedu (2005) who pointed that the sophistication and card acceptability helps to store and manipulate data, and handles multiple applications on one card securely. He further added that the uptake of bank cards has gone high, fueling the excitement over branchless banking whereby cash withdrawals make up 70 percent of the transactions at the ATMs at one bank.

### 4.4.3 ATM Availability

**Table 4.7: ATM Availability**

| Statement | N | Mean | Standard Deviation |
|---|---|---|---|
| ATM provides 24 hours service | 11 | 5.31 | .731 |
| ATM reduces the workload of bank's staff | 11 | 4.52 | .596 |
| ATM is very beneficial for travellers | 11 | 3.57 | .742 |
| ATM may give customers new currency notes | 11 | 4.01 | .832 |
| ATM provides privacy in banking transactions | 11 | 4.37 | .650 |

| | | | |
|---|---|---|---|
| ATMs enable banks to re-design branches into more sophisticated customer services and sales outlets | 11 | 3.84 | .783 |
| ATMs have enabled some banks and non-bank financial institutions to develop successful “branchless” business models | 11 | 4.28 | .925 |

*Source: Researcher 2014*

Table 4.6 indicates the responses on the influences of ATM availability in technology application to enhancing efficiency in international banks of Kenya. Those strongly agreed were on ATM provides 24 hours service with a mean of 5.31 and a standard deviation of .731, and on ATM reducing the workload of bank's staff with a mean of 4.52 and a standard deviation of .596. In addition, those agreed were on ATM providing privacy in banking transactions with a mean of 4.37 and a standard deviation of .650, ATMs have enabled some banks and non-bank financial institutions to develop successful “branchless” business models with a mean of 4.28 and a standard deviation of.925, ATM give customers new currency notes with a mean of 4.01 and a standard deviation of .832 and on ATMs enable banks to re-design branches into more sophisticated customer services and sales outlets with a mean of 3.84 and a standard deviation of .783. Therefore, the analysis of the findings conclude that ATM availability influence the application of technology in international banks in Kenya. The findings of the study echo that one of Joseph & Stone, (2003). They identified that ATM availability was user-friendly, had convenient locations, enabled to secure positions, and also it acted as essential factors of service quality in banks. Further, Mobarek (2007) adds on the sentiments ATM availability helped bank to secure speed of operation, and waiting time as predictors of service quality.

## 4.5 Inferential Statistics

This section presents a discussion of the results of inferential statistics. Correlation analysis was used measure the strength of the relationship between the independent variables i.e. the electronic fund transfers, card system, ATM Availability. Regression analysis established the relative significance of each of the variables on efficiency of international banks.

### 4.5.1Correlation Analysis

The Pearson product-moment correlation coefficient (or Pearson correlation coefficient for short) is a measure of the strength of a linear association between two variables and is denoted by *r*. The Pearson correlation coefficient, *r*, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases.

**Table 4.8: Correlation coefficient**

| | Electronic Fund Transfers | Card System | ATM Availability |
|---|---|---|---|
| Electronic Fund Transfer | 1 | | |
| Card System | 0.8345 | 1 | |
| ATM Availability | 0.8507 | 0.8679 | 1 |

*Source: Researcher 2014*

The study in table 4.7, show that all the predictor variables were shown to have a positive association between them at a significant level of 0.05 and hence included in the analysis. There was strong positive relationship between electronic fund transfer and the card system (correlation coefficient 0.8345), card system and ATM availability (coefficient 0.8679), and on the ATM availability and electronic fund transfer (coefficient 0.8507).

### 4.5.2 Regression Analysis

The following are the results of regression analysis.

Analysis in table 4.8 shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) R2 equals 0.843, that is, electronic fund transfers, card system, and ATM Availability explains 84.3% of efficiency of international banks in Kenya. The P- value of 0.000 (Less than 0.05) implies that the regression model is significant at the 95% significance level.

**Table 4.9: Model Summary**

| | | | | | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .918(a) | .843 | .805 | .51038 | .843 | 1.242 | 4 | 96 | .000 |

*Predictors: (Constant),* electronic fund transfers, card system, ATM Availability

*Dependent Variable:* Efficiency of international banks

*Source: Researcher 2014*

**Table 4.10: Analysis of Variance (ANOVA)**

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | .852 | 4 | .213 | 1.242 | .000 |
| Residual | 20.35 | 119 | .171 | | |
| Total | 22.64 | 123 | | | |

*Predictors: (Constant),* electronic fund transfers, card system, ATM Availability

*Dependent Variable:* Efficiency of international banks

*Source: Researcher 2014*

ANOVA findings (P- value of 0.00) in table 4.9 show that there is correlation between the predictors' variables (electronic fund transfers, card system, ATM Availability*)* and response variable (Efficiency of international banks).

**Table 4.11: Regression coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 0.903 | 0.123 | | 7.367 | 0.000 |
| | Electronic fund transfer | 0.056 | 0.028 | 0.158 | 2.021 | 0.045 |
| | The card system | 0.034 | 0.027 | 0.101 | 1.157 | 0.210 |
| | ATM availability | 0.036 | 0.030 | 0.105 | 1.194 | 0.234 |

*Source: Researcher 2014*

a. Dependent Variable: Efficiency of international banks

From the Regression results in table 4.10, the multiple linear regression model finally appear as

$$Y = 0.903 + 0.056\ EFT + 0.034CS + 0.036\ ATM + 0.123$$

The multiple linear regression models indicate that all the independent variables have positive coefficient. The regression results above reveal that there is a positive relationship between dependent variable (Efficiency of international banks) and independent variables (electronic fund transfers, card system, ATM Availability). From the findings, one unit change in electronic fund transfer results in 0.056 units increase in efficiency of international banks. One unit change in the card system and ATM availability cause 0.034 and 0.036 in the efficiency of international banks respectively. The t statistics helps in determining the relative importance of each variable in the model. As a guide regarding useful predictors, we look for t values well below -0.5 or above +0.5. In this case, the most important variable was electronic fund transfer followed by ATM availability, and the card system respectively.

# CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Summary

The main objective of the study was to analyze the factors influencing the application of technology to enhance efficiency of international banks in Kenya. The researcher gathered the background information so as to establish whether it had an influence on technology application of international banks in Kenya. This information range from gender of the respondents, length of service and position held in the bank. According to the analysis of the findings, it emerged that a majority were from the male gender than their female counterparts. It was also revealed that most participants have worked for 1-8 years majorly from the managerial department hence had the required information for this study.

The study also required the participants to indicate their level of agreement or disagreement on the influences of electronic fund transfer to application of technology in international banks. Based on the analysis of the findings, it was revealed that those strongly agreed were on that it allows retailers with multiple locations to track payments for deliveries through one central source, it reduced the time spent keying data and correcting errors, data can be utilized for bank reconciliation, and on improving consistency of information since retailers receive updated information from the bank on payments, rather than trying to reconcile cash register to payments to vendors. Also those agreed were on electronic processing of invoice data and payment information is possible to automatically post data directly to accounting systems, eliminating customary

procedures for processing cash payments, and also it has reduced driver check-in time during reconciliation/settlement. Moreover, the findings revealed that those indicated to a neutral extent were on that EFT reduced the risk of robbery by eliminating the amount of cash carried by drivers.

The researcher also wanted to find out the influences of the card system in technology application to enhance efficiency of international banks. The questions were posed in a five point likert scale. According to the analysis of the findings those agreed were on that the card system provides more storage to secure reading and writing of data, the card system carries secure IT applications such as secure logon to networks, digital signature, and encryption, payment through the card system enables to achieve a higher security level of the credential and the overall access control system, through the card system users can define and control their access keys, and the card system has the capacity to add other applications to the card over proximity technology. It was also further revealed that those who were to a neutral extent were on the statement that the card system technology was affordable.

Further, the researcher investigated the influences of ATM availability to application of technology in international banks. The findings of the study revealed that the strongly agreed were on the statements that ATM provides 24 hours service, and also it reduced the workload of bank's staff. In addition, those agreed were on ATM providing privacy in banking transactions, it enabled some banks and non-bank financial institutions to develop successful “branchless” business models; it gave customers new currency notes on, and also enabled banks to re-design branches into more sophisticated customer services and sales outlets.

Therefore, it is quite evident from our study that applications of technology enhance efficiency of international banks and the banking industry in general because it has set the stage for exceptional increase in financial activity across the globe.

**5.2 Conclusion**

From the analysis of the findings, it is concluded that electronic fund transfer allows retailers with multiple locations to track payments for deliveries through one central source, it reduced the time spent keying data and correcting errors, data can be utilized for bank reconciliation, and on improving consistency of information since retailers receive updated information from the bank on payments, rather than trying to reconcile cash register to payments to vendors. Further, it helps in electronic processing of invoice data and payment information is possible to automatically post data directly to accounting systems, eliminates customary procedures for processing cash payments, and also it has reduced driver check-in time during reconciliation/settlement.

On the influences of the card system in technology application to enhance efficiency of international banks, it was concluded that it provides more storage to secure reading and writing of data, it carries secure IT applications such as secure logon to networks, digital signature, and encryption. Moreover, the findings concludes that payment through the card system enables to achieve a higher security level of the credential and the overall access control system, and through the card system users can define and control their access keys. Further, the findings of the study conclude that the card system has the capacity to add other applications to the card over proximity technology.

Further, the research findings conclude that ATM provided 24 hours service, it reduced the workload of bank's staff, it provided privacy in banking transactions, it enabled some

banks and non-bank financial institutions to develop successful “branchless” business models; it gave customers new currency notes on, and also it enabled banks to re-design branches into more sophisticated customer services and sales outlets.

### 5.3 Recommendations for policy practice

From the findings of the study, it is evident that application of technology enhances efficiency of international bank thus the following recommendations were made that:

International banks should ensure free flow of information and adequate use of technology in decision making in strategic and tactical planning and that a proper orientation be conducted in order to help managers at all levels as to ensure proper and adequate use of technology facilities in generating and disseminating information for better decisions.

International banks to efficient, technology should be designed and operated related to organizations, management and technical factors. The study encourages the organizations' top management to participate in enhancing efficiency and make an effective contribution to system design. The information specialists (including systems analysts, designer, ITC personnel, accountants and operations researchers) should cooperate and become more conscious and ware of managerial functions needs so that more technology application is developed to enhance efficiency.

Finally, it is recommended that attempts in technology integration should focus on using technology to enhance efficiency rather than the acquisition of infrastructure. Time and perceived benefits of using technology to develop courses will continue to be an ongoing issue. International banks should think of creative approaches to ensure that the respectful

department has more time to experiment with integrating technology on service delivery. International banks should also explore ways of training that are best supported by technology to enhance efficiency.

# REFFERENCES


Agboola, A. A. (2001) "Impact of Electronic Banking on Customer Services in Lagos, *Nigeria"in Ife Journal of Economics and Finance*. Department of Economics, O.A.U, Ile-Ife, Nigeria, vol.5, Nos. 1&2.

Allen and Rai (1996). Developing e-Banking capabilities in a. Ghanaian Bank: Preliminary lessons, :. *Journal of Internet Banking and Commerce*, 11 (2).

Alternative scales for measuring servicequality: a comparative assessment based on psychometric and diagnostic criteria", *Journal of Retailing, Vol. 70 No.3, pp.201-30.*

Amedu, U. M. (2005). Domestic electronic payment in Nigeria. The Challenges Central Bank of Nigeria Bullion., 29 (1).

Aragba-Akpore, S. (1998): 'The Backbone of Banks' Service Regeneration', Money watch, July 22, p23.

Bhattacharya, S. and A. Thakor (1993). Contemporary Banking Theory, *'Journal of Financial Intermediation 3, 2-50.*

Bhattacharyya S.K. & Zillur Rahman (2002) .The relative importance of technology in enhancing customer relationships in banking – a Scottish perspective, *International Journal of Bank Marketing*, Vol.14 No. 4, pp. 172-191.

Dabholkar, P. (1994*). Technology based service delivery", Advances in Service Marketing and Management,* Vol. 3 No.1, pp.241-71.

Davies et al., (1996). Provision of Electronic Banking in the. UK and the Republic of Ireland. *International Journal of Bank Marketing* , 17, 72–82.

Diamond, D. and P. Dybvig (1983). Bank runs, deposit insurance and liquidity, *'Journal of Political Economics 91, pp.401.-419.*

Featherman, M.S., & Pavlou, P.A. (2002). Predicting e-services adoption: perceived risk facets perspectives. *Eighth Americas Conference on Information Systems*. Retrieved 20 July 2011 from http://www.hp.com/solutionsl/e-service.

Forrester Research (2005). *How German consumer use banking channels*. Retrieved from http://www.forrester.com/Research /Document/Excerpt/0,7211,37577,00.h.

Freixas, X. and J.C. Rochet (1998). *Microeconomics of banking, MIT Press.*

Frenzel, C.W. (1996). *Information Technology Management, Cambridge:* Thomson Publishing Company.

Graumann, S., & Koehne, B. (2003). *Monitoring information economy* ,. Fact Sheet 2003. NFO Infratest on behalf of the German ministry of Economics. Munich, Germ.

Hung, S.Y., Ku, C.Y., & Chang, C. M. (2003). Critical factors of WAP services adoption: an empirical study. *Electronic Commerce Research and Applications*, 2, 42-60.

Jaccard, J., Wan, C.K., & Turrisi, R. (1990). The detection and interpretation of interaction effects between continuous variables in multiple regression. Multivariate *Behavioural Research, 25*, 4, 467-478.

Jahangir Karimi, Toni M. Somers and Yash P. Gupta (2002). *Named "Impact of InformationTechnology management practices on customer service.*

Joseph, M., & Stone, G. (2003). An empirical evaluation of US bank customer perceptions of the impact of technology on service delivery in the banking sector. *International journal of Retail & Distribution Management*, 31(4), 190-202.

Khan, S. (2007). *Adoption Issues of Internet Banking in Pakistani.* Films, Lulea University of Technology, Department of Business Administration and Social Science, Division of System Sciences, Sweden.

Kim, G., Shin, B., & Lee, H. G. (2009). Understanding dynamics between initial trust and usage intentions of mobile banking. *Information Systems Journal,* 19,283-3.

Kontio, J., Lehtola, L., & Bragge, J. (2004). Using the focus group method in software engineering: obtaining practitioner and user experiences. *Proceedings of the 2004 International Symposium on Empirical Software Engineering* (ISESE'04).

Lovelock, C. H. (2000). *Functional integration in service: understanding the links between marketing, operations, and human resources*.

Mahajan and Peterson (*1985).* Alternative Monies and the demand for Media of Exchange, *Journal of Money, Credit and Banking,* Vol.28, pp. 942-960.

Mattila, M. (2002). Factors affecting the adoption of mobile banking services. *Journal of Internet Banking and Commerce*. Retrieved 1 June 2010 from http://www.arraydev.com/commerce/jibc/0306-0.htm.

McDonnell, O & K. Keasay (2003). *The Feature of Retail Banking in Europe-A View from the Top, London,* John Willey & Sons, Ltd.

Mobarek, A. (2007). *E-Banking Practices and Customer Satisfaction* - A Case Study in Botswana.

Morris, M., & Venkatesh, V. (2000). Age differences in technology adoption decisions: implications for a changing work force. Personnel Psychology, 53,375-4.

Murinde and Tefula (2008) .*Bank Ownership and Performance: Are Public Banks Different*?" (Unpublished; Washington: Inter-American Development Bank).

Ovia, J. (2000):*'From Banking Hall to E-Platform'*, Financial Standard, January 15.

Parasuraman, A. (2000). Technology readiness index (TRI): a multiple item scale to measure readiness to embrace new technologies. *Journal of Services Research* 2, 4, 307- 320.

Pearce, R. (2004). *Retail Banking Strategy,* Canada: BMO Financial Group.

Pedersen, P.E., Methlie, L.B., & Thorbjornsen, H. (2002). Understanding mobile commerce end-user adoption: a triangulation perspective and suggestions for an exploratory service evaluation framework. *Proceeding of the 35 th Hawaii International Conference on System Science*.

Petrova,K.(2004). *Mobile commerce adoption: end-user/customer views*. In Delener, N. & Chao, C.N. (Eds.). Navigating crisis and opportunities in global markets: leadership, strategy and governance.

Sebastian A.P. Titus and Albin D. Robert Lawrence (2004). "*Customer Focus in Banking Services.*

White, B. (1998). *The Coming Transformation of Continental European Banking*. "BIS working paper No. 54.

# APPENDICES

## Appendix I: Research questionnaire

Hello my name is **Kendi** I am an MBA student from the University of Nairobi. I am carrying out research on the '**FACTORS INFLUENCING THE APPLICATION OF TECHNOLOGY TO ENHANCE EFFICIENCY OF INTERNATIONAL BANKS IN KENYA**. Please answer the following questions. This will take approximately 10-15 minutes of your time. Your answers will not be shared with anyone outside this project.

**Instructions:**

(Please read the instructions given and answer the questions as appropriately as possible). It is advisable that you answer or fill in each section as provided. Make an attempt to answer every question fully and honestly

**SECTION A: GENERAL INFORMATION**

By the means of tick (√) kindly indicate an option that best describes you where appropriate. Also fill in the blanks where necessary.

1. Gender

Male ( )

Female ( )

2. Length of Service

1-8 years ( )

9- 16 years ( )

17-24 years ( )

3. Position in the Organization

Managerial ( )

Non-managerial

**SECTIN B: MAIN ISSUES OF THE STUDY**

Please indicate your overall evaluation of all part B sections that applies to your organization by placing a tick (√) mark in the relevant box below using the following scale;

5. Strongly Agree (SA) 4. Agree (A) 3.Neutral (N) 2. Disagree (D)

1. Strongly Disagree (SD)

| **ELECTRONIC FUND TRANSFERS** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Eliminates customary procedures for processing cash payments | | | | | |
| Reduces the risk of robbery by eliminating the amount of cash carried by drivers | | | | | |
| Reduces back-tracking and double stops on routes so as to make delivery when a check signer is available | | | | | |
| Reduces driver check-in time during reconciliation/settlement | | | | | |
| Reduces the time spent keying data and correcting errors | | | | | |
| Data can be utilized for bank reconciliation | | | | | |
| Allows retailers with multiple locations to track payments for deliveries through one central source | | | | | |
| Electronic processing of invoice data and payment information makes it possible to automatically post data directly to accounting systems | | | | | |
| Improves consistency of information since a retailer can receive updated information from the bank on payments, rather than trying to reconcile cash register to payments to vendors | | | | | |

| THE CARD SYSTEM | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Payment through the card system enables to achieve a higher security level of the credential and the overall access control system. | | | | | |
| The card system carries secure IT applications such as secure logon to networks, digital signature, and encryption | | | | | |
| The card system provide more storage and the secure reading and writing of data | | | | | |
| The card system has the capacity to add other applications to the card over proximity technology. | | | | | |
| Through the card system users can define and control their access keys | | | | | |
| The card system technology is affordable. | | | | | |

| ATM AVAILABILITY | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| ATM provides 24 hours service | | | | | |
| ATM gives convenience to bank's customers | | | | | |
| ATM reduces the workload of bank's staff | | | | | |
| ATM provide service without any error | | | | | |
| ATM is very beneficial for travellers | | | | | |
| ATM may give customers new currency notes | | | | | |
| ATM provides privacy in banking transactions | | | | | |
| ATMs enable banks to re-design branches into more sophisticated customer services and sales outlets | | | | | |
| ATMs have enabled some banks and non-bank financial institutions to develop successful “branchless” business models | | | | | |

**THANK YOU FOR YOUR PARTICIPATION**

**Appendix II: List of International Banks**

1. Barclays Bank
2. Chase Bank Kenya Ltd
3. Citibank N.A
4. FINA Bank ltd
5. Gurdian Bank Ltd
6. Habib Bank A.G Zurich
7. Imperial Bank ltd
8. Middle East Bank
9. Oriental Commercial Bank Ltd
10. Paramount Universal Bank Ltd
11. Stanbic Bank Kenya ltd
12. Standard Chartered Bank of Kenya
13. Victoria Commercial Bank Ltd

**(Source Central Bank of Kenya).**