

**THE RELATIONSHIP BETWEEN INFORMATION COMMUNICATION TECHNOLOGY  
USAGE ON EFFICIENCY AMONG COMMERCIAL BANKS IN KENYA**

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## DECLARATION

I declare that this research proposal is my original work and it has not been presented in any other university or institution for academic credit.

Signature..... Date.....

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### **Declaration by the Supervisor**

This research proposal has been submitted for examination with my approval as the university supervisor

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## **LIST OF ABBREVIATIONS**

<b>ACH</b>	Automated Clearing House
<b>ACH</b>	Automated Teller Machine
<b>CBD</b>	Central Business District
<b>CBK</b>	Central Bank of Kenya
<b>EFT</b>	Electronic Fund Transfer
<b>ERMA</b>	Electronic Recording Method of Accounting
<b>ICT</b>	Information Communication Technology
<b>KEPPS</b>	Kenya Electronic Payment & Settlement System
<b>MICR</b>	Magnetic Ink Character
<b>PIN</b>	Personal Identification Number
<b>PSTN</b>	Public Switched Telephone Network
<b>SMS</b>	Short Messages
<b>RTGS</b>	Real Time Gross Settlement
<b>SWIFT</b>	Society for Worldwide interbank transfers
<b>VOIP</b>	Voice over Internet Portal



## **ABSTRACT**

This project examines the relationship between Information Communication Technology usage has on efficiency in the banking industry in Kenya. The new electronic age has transformed the marketing of banking services. The modern customer demands new and differentiated financial products and services. This way, banks must continuously search for new strategies to develop and market their products and services. The banking industry has gone through many changes as a result of the introduction of ICT. The aim of this project is to evaluate the various factors that ICT usage has brought in place to meet productivity, customer satisfaction and service delivery in the banking industry. This include the effects of service delivery on the usage of ICT, the effect of products and services differentiation on ICT, the effect of customer needs and wants on ICT, the effects of on costs on usage of ICT, the effects of competition on usage of ICT. The focus of the report has mainly been in the Licensed Commercial banks in Kenya and. Data was obtained from both the operations managers at the banks. The data was analyzed using simple descriptive research methodology with the help of illustrations through table of figures to objectively determine the relationship between Information Communication Technology usage on Efficiency in banking industry in Kenya. The study focused on licensed commercial banks in Kenya. The case study research design was adopted for this research work; to study 43 licensed commercial banks according to the Central bank of Kenya (2012). The questionnaire was used as instrument to collect data for the study. The questionnaire was administered on the sampled population, which were dully completed and returned to the researcher. The data collected were analyzed and interpreted. Relevant findings were made fro m the study on the efficiency and application of ICT in banking sector. The finding shows that ICT adoption in banks has led to improvement of operational efficiency and reduced information costs.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of Study**

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, 1993). Information communication technology plays a vital role in the sustained growth of financial institutions. The term ICT is defined in a broad sense as “technologies dedicated to information storage, processing and communications. Information communication technology focuses on a combination of hardware, software, telecommunications and office equipment that transform raw data into useful information for speedy retrieval.

The banking sector is undergoing a rapid change as the international economy expands and advances towards institutional and market competence. The new information communication technology (ICT) is turning into the most important factor in the future development of banking, influencing banks’ marketing and business strategies. Technology has opened up new markets, new products, new services and efficient delivery channels for the banking industry. Online electronics banking, mobile banking and internet banking are just a few examples. Information communication technology has also provided banking industry with the wherewithal to deal with the challenges the new economy poses (Marker et al, 2001).

ICT has been the cornerstone of recent financial sector reforms aimed at increasing the speed and reliability of financial operations and of initiatives to strengthen the banking sector. The ICT revolution has set the stage for unprecedented increase in financial activity across the globe. The progress of technology and the development of worldwide networks have significantly reduced the cost of global funds transfer. It is information communication technology which enables banks in meeting such high expectations of the customers who are more demanding and are also more

techno-savvy compared to their counterparts of the yester years. They demand instant, anytime and anywhere banking facilities. ICT has been providing solutions to banks to take care of their accounting and back office requirements. This has, however, now given way to large scale usage in services aimed at the customer of the banks. ICT also facilitates the introduction of new delivery channels - in the form of Automated Teller Machines, Net Banking, Mobile Banking and the like.

Further, IT deployment has assumed such high levels that it is no longer possible for banks to manage their IT implementations on a standalone basis. With ICT revolution, banks are increasingly interconnecting their computer systems not only across branches in a city but also to other geographic locations with high-speed network infrastructure, and setting up local area and wide area networks and connecting them to the Internet. As a result, information systems and networks are now exposed to a growing number. Technology Products: (1).ATM (2).Internet Banking (3).Smart &Credit Card services (4).Mobile banking (5).Online banking (6).Electronic Funds Transfer(Stanford, 2003)

### **1.1.1 ICT**

ICT in the banking sector has helped in addressing costs and inefficiencies entailed with service delivery to customers. Electronic payments and automation systems have been the recent changes in financial service organization. This changes lies in the cost reduction that has been made possible of removal of paper-based transactions.

Increased use of ICT in the financial institutions raises two concerns that relate to the basic soundness of the financial services industry system security and system integrity (Hynes and Thompson, 2001).System security deals with the problem of those who will try hack the system from outside while system integrity handles issues arising with recovering a system without loss of data in the event of failure

### **1.1.2 Productivity**

ICT provides a supportive for human activities to improving of organization's efficiency and effectiveness (Cohen et al. 2002) Therefore ICT helps to execute activities faster, support decision making process and logistics efficiency. Thus the use of ICT makes the process more transparent,

adoption of better business practices to meet customer service levels, increase banks capability to respond to dynamic environment therefore reducing operation costs.

However ICT use in banks differ significantly with other organizations as the level of expertise risk and constraints faces by these organization could be different, although when ICT is not properly structured to the required business process it could create dilutions on its benefits in the banks operations (Kuan and Chau,2001)

### **1.1.3 Service Delivery**

Kenyan banks have exponentially embraced the use of information and communication technologies in their service provision. They have invested huge amounts of money in implementing the self and virtual banking services with the objective of improving the quality of customer service. Some of the ICT-based products and services include the introduction of SMS banking, ATMs, Anywhere banking software's, Core banking solution, Electronic clearing systems and direct debit among others. In mid 2005, Kenya's banking Industry moved a milestone by introducing Real Time Gross and Settlement system (RTGS) which was renamed Kenya Electronic Payment and Settlement system (KEPSS).

This facilitates the inter-bank financial data transfer. The development of e-banking services helps in decongesting banking halls and reduces the incidences of long queues in banking halls. Digital-based financial services have made a significant contribution in covering the cost of offering financial services (Musyoka, 2004)

### **1.1.4 Customer Satisfaction**

Though the relationship of the bank and its customers remains contractual, the terms of these contracts have taken 360 degrees turn around. As it is clear for the previous story, banks are focused on five key areas: meet customer's service expectations, service delivery, cut costs, and manage competition. For this banks have been exploring new financial products and service options that would help them grow without losing existing customers. And any new financial product or service that a bank offers has been intrinsically related to technology. (Harry, 2006)

### **1.1.5 Effect of ICT on Productivity**

The Kenyan banking industry has been expanding branch networking amid the introduction of branchless banking system, which include the use of EFTs, ATM cards, SMS banking etc. Kenya currently has approximately a branch network of 800, as compared to 486 branches in the period ended December 2002. Also, the slow growth of branches can be attributed to the rapid rise of alternatives, which include electronic financial product through mobile phones and personal computers. (information.go.ke)

### **1.1.6 Commercial Banks in Kenya**

Kenya has 43 licensed commercial banks, through the Central Bank of Kenya Act and other prudential guidelines issued by the Central Bank of Kenya (CBK) that govern the Banking industry in Kenya. The banking sector was liberalized in 1995 and exchange control lifted.

The CBK which falls under the ministry of Finance is responsible for formulating and implementation of monetary policy and fostering the liquidity, solvency and proper functioning of the financial systems.

The CBK publishes information on Kenya's commercial banks and non-banking financial institutions, interest rates and other publication guidelines. Banks in Kenya have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banks' interest and addresses issues affecting its members (The Kenya Banking Sector Report, 2007).

## **1.2 Research Problem**

These are some of the key issues, which form the focus of this study. This study examines the relationship of ICT in the light of these variables, starting with the services and the banking sectors as a whole. First, the services are easily and more readily targeted for reforms (telecommunications and financial services are ready examples). Secondly, because of the routinized character of producer services such as accounting, banking and finance, they are also readily "programmed" and therefore impacted by ICT (especially computerization). Third, services have undergone tremendous technological transformation in the use of management-based and information intensive technologies.

Despite ICT innovations in management related activities of operations in commercial banks in Kenya, the process still faces a number of problems, banking journal (2002). Kenyan Banks are faced with enormous problems of information access. These problems, especially that of low level telephone penetration and uneven access, appear to be insurmountable. In spite of the efforts made by successive banks in Kenya to improve on the penetration rate, the sector has continued to nose dive as a result of fresh challenges in terms of building information and communication technology (ICT) related management and communication infrastructure. This has resulted in almost negative benefit, both to the banks and the economy as a whole. It is quite evident that Kenya at present lacks innovation, capacities and capabilities in information technology (ICT) management and hardware maintenance.

This notwithstanding, the country has been and will continue to import and use a wide range of durable consumer electronics, computers and telecommunication equipments. It must therefore begin to accumulate the capabilities to repair and maintain these vintages. Indeed, if Africa is not to be left behind in global trade and development, it must be able to master certain basic capabilities in ICT. In addition, the rate of technical obsolescence is likely to be much faster with ICT, compared with the natural technologies (such as steel, textiles and petrochemicals). The technological followers in Kenya may therefore face the difficulty of sourcing for parts, components and peripherals, unless they begin to accumulate the capacity for component manufacture.

Available technology is largely obsolete electro-mechanical switching system. Presently, some countries are engaged in massive modernization efforts; given the foregoing, the diffusion of ICT will have widespread, albeit differentiated impact on all countries, industries and sectors. Policy must therefore begin to look at variables such as: Change in the structure of banking industry and services; Employment structure, training and manpower; Industrial organization and management; Production processes and products; Telecommunication infrastructure and revolution of service delivery of existing infrastructure, especially power systems; Information technology supply and how the accelerating growth impacts on trade and long-term competitiveness and maturation of banking industry.

Studies have concentrated so much on ICT and banks but there is no known study that has been done on the relationship between ICT usage ,productivity, service differentiation and customer satisfaction in Kenyan Banks, a knowledge gap. It is against this background that a the study is motivated to fill the gap by investigating the extent of the relationship and impact on financial functions in Commercial banks in Kenya. The study sought to answer the measures to be used to minimize challenges experienced in the adoption of ICT to foster efficiency of banks operations?

### **1.3 The Objectives of the Study**

#### **1.3.1 General Objective:**

To determine the effectof information communication technology on the productivity, customer satisfaction and differentiation in the banking sector in Kenya

#### **1.3.2 Specific Objectives:**

- i. To determine the effect of information communication technology on productivity in the banking sector in Kenya.
- ii. To analyze the effect of ICT on services differentiation in the banking sector in Kenya.
- iii. To establish the level of satisfaction of customers' needs and wants as a result of the use of information communication technology in the banking sector in Kenya.

### **1.4 Value of the Study**

This study is expected to provide a basis for comprehensive information on information and communication technology application in commercial banks in Kenya.

The study will established the existing gaps in the adoption of information and communication technology in the operations of commercial banks in achieving their statutory functions.

The output of this study will serve as a blueprint for libraries, information managers/information scientists, researchers, lecturers, students, and teachers to chart the right course of action for the use of information and communication technology.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter reviewed the related literature on the subject and studies presented by various research findings, analysts and authors. The researcher drew materials from various sources which were closely related to the theme and objective of the study. This enabled the researcher to identify & confirm major gains in the area concerning the knowledge being investigated. The researcher gained from the previous research findings and was able to generate useful information that supplemented and strengthened the study.

#### **2.2 Theoretical review**

##### **2.2.1 Diffusion Theory of Innovation**

Diffusion of Innovation (DOI) Theory, developed by Rogers in 1962, is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. Adoption means that a person does something differently than what they had previously (i.e., purchase or use a new product, acquire and perform a new behavior, etc.). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible.

Adoption of a new idea, behavior, or product (i.e., "innovation") does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation. There are five established adopter categories, and while the



majority of the general population tends to fall in the middle categories, it is still necessary to understand the characteristics of the target population.

When promoting an innovation, there are different strategies used to appeal to the different adopter categories; five of which are one Innovators - These are people who want to be the first to try the innovation. They are venturesome and interested in new ideas. These people are very willing to take risks, and are often the first to develop new ideas. Very little, if anything, needs to be done to appeal to this population; secondly Early Adopters - These are people who represent opinion leaders. They enjoy leadership roles, and embrace change opportunities. They are already aware of the need to change and so are very comfortable adopting new ideas. Strategies to appeal to this population include how-to manuals and information sheets on implementation. They do not need information to convince them to change; thirdly Early Majority - These people are rarely leaders, but they do adopt new ideas before the average person. That said; they typically need to see evidence that the innovation works before they are willing to adopt it.

Strategies to appeal to this population include success stories and evidence of the innovation's effectiveness; Fourth Late Majority - These people are skeptical of change, and will only adopt an innovation after it has been tried by the majority. Strategies to appeal to this population include information on how many other people have tried the innovation and have adopted it successfully and finally Laggards - These people are bound by tradition and very conservative. They are very skeptical of change and are the hardest group to bring on board. Strategies to appeal to this population include statistics, fear appeals, and pressure from people in the other adopter groups.

### **2.2.2 Innovation Theory and Innovation Policy**

This theory explores some links between the development of innovation theory since the late 1970s, and the evolution of innovation policy ideas, primarily in the 1990s. The argument is that there is a close link between theory and policy, essentially going through two phases. It argues that the complex crisis of the 1970s created an opening for rival analyses of events. During the 1980s, the development of evolutionary theories (pioneered by Nelson and Winter) and of empirically-based innovation studies, created a framework in which policy environments could consider the implications of heterodox ideas both for objectives and instruments of public policy.

By the early 1990s policymakers, particularly in Europe, were beginning to see innovation policies not just as important arenas of action in themselves, but as instruments towards much more wide ranging policy objectives. The policy agencies involved, though hierarchical, were characterized by relatively open structures that permitted a degree of diversity: so organizations like the European Commission played a central role, whereas the World Bank, for example, did not. Increasing policy interest stimulated a second phase of research in the 1990s, sponsored both nationally and by various EU programmes, in which expanding the innovation-oriented knowledge base became a minor but nonetheless significant objective for policymakers. The theory argues that the policy link has been central to the development of this field. The intellectual developments would certainly have been impossible within the constraints of existing disciplinary structures and university funding systems, while the analytical achievements have permitted a wide expansion in the conceptualization of policy targets and the instruments available to policymakers. In a sense, this is itself an evolutionary story: of a crisis and a conjectural niche that permitted the creation and (so far) survival of a set of diverse and certainly non-conventional ideas.

To single out technological innovation is not to deny the many other cases in which socialscientists have played such a role in recent times, particularly through interactions with the policy and business worlds. Macroeconomic policy is only the best-known example. In 1936, forexample, when John Maynard Keynes published his *General Theory of Employment, Interest and Money*, theorists and policy makers were searching desperately for an explanation of the depth and length of the Great Depression. Many credit Keynes with revolutionizing both economics and politics: the former by providing a powerful theoretical justification for deficitspending and demand management as a way out of the Depression; and the latter by influencingnew policy initiatives through his membership of various high-level government commissions inthe United Kingdom, consultations with government authorities in the United States and participation in the formative meetings of institutions such as the IMF and the World Bank (Hall,1989; Salant, 1989).

He was also a systematic investor, and Chairman of a major insurance company. Although many of the policies advocated by Keynes in his General Theory had been proposed earlier by others and had already acquired many adherents in the United States and the United Kingdom, it was Keynes who provided the theoretical underpinnings for a stream of future policy instruments; it was this policy dimension that proved crucial to the acceptance of his framework.

Several decades later, crises and the insufficiencies of existing theory would once again open opportunities for dissenting views. The unemployment-inflation crisis of the 1970s had long-lasting impacts, since the desperate anti-inflation policies of the 1980s did little to affect unemployment, growth and productivity problems. For policymakers, this was in part a crisis of understanding. As Nelson and Winter argued, existing theory had “neither the breadth nor the strength to provide much guidance regarding the variables that are plausible to change” (Nelson and Winter, 1977, pp. 38-40 ). But opportunity alone does not suffice to explain the emergence of innovation at the centre of intellectual debates over growth, competitiveness and equity and of institutions and innovation systems as conceptual tools for policy making in the 1990s and 2000s.

## **2.3 Dimensions of ICT in the Banking sectors**

### **2.3.1 The Automated Teller Machine**

Banks provides debit cards together with a personal identification number (PIN), which provides access to the bank account of which one is able to withdraw or using the facility at the point of sale. Automatic Teller Machines (ATM's) provide a continual, convenient banking service. No human agency could supply such a benefit at such a low cost. Banks have over at a thousand ATM machines across all urban centers in Kenya, Uganda, Tanzania and Southern Sudan. Banks among also have launched new smart ATM's that can receive deposits, withdrawals and detect fake currency.

### **2.3.2 Internet Banking**

Banks have adopted Internet banking which is turning out to be the driving force for online banking .It is conducted on a personal computer with connection to the World Wide Web or inter-networks where most transactions can be conducted. A bank card is needed and a pre-registered password to

be able to operate through this service. It can be done at any time of day from the comfort of the users' homes and is convenient, fast and relatively safe. The internet banking has now evolved further. i.e. Online banking services have been developed so that one can not only check balances but also can be able to receive or make payments online. This helps banks to reduce costs and offer easy access to financial services. In the recent times, the bank has adopted the use of VoIP (voice over IP) for internet which can be able to carry large volumes of data as compared to the conventional telephone connectivity. VoIP is an IP telephony term for a set of facilities used to manage the delivery of voice information over the Internet. VoIP involves sending voice information in digital form in discrete packets rather than by using the traditional circuit-committed protocols of the public switched telephone network (PSTN).

### **2.3.3 Mobile banking**

It's the latest innovation where users are able to transact using their mobile phones. One can check their account balances, order for cheques, and make transfers and payment of bills just at the touch of their phones. Kenya is among the top countries in the world to adopt the mobile banking. commercial banks offers mobile advantage that enable its customers transact at the comfort of their phones e.g M-banking ,MPESA ATM withdrawal, Orange money, yu cash & M-kesho .

## **2.4 Drivers of ICT in the Banking Sector**

### **2.4.1 Service Delivery**

Information communication technology banking allows expanded customer contact through increased geographical reach and lower cost delivery channels. Banks and other financial institutions use the Internet as an alternative delivery channel to reach its existing customers and attract new customers. What banks deliver and how they deliver it have changed dramatically. And these changes are likely not over yet. The impact of information communication technology on banking can provide clues about what lies ahead as banks navigate into the twenty-first century. Customer satisfaction is also dependent upon the delivery channels used by banks in providing the services

### **2.4.2 Products and Services Differentiation**

Strategic planning and relationship building is key in bank's success, Information communication technology products and services can provide a means for the bank to develop and maintain an ongoing relationship with their customers by offering easy access to a broad array of products and services. ICT not only permits the development of innovative offerings, as already mentioned, but also can alter their means of development. For instance, ICT enables the canvassing of a wide spectrum of consumer opinion to a variety of product designs; it even allows consumers to participate in product design; and, of course, ICT allows product development to respond to customer requirements, perhaps tapped in at the point of sale. By capitalizing on brand identification and by providing a broad array of financial services, banks have built some customer loyalty, cross-sell, and enhanced repeat business. With dramatic advancements in ICT, banking customers have become increasingly savvy, making use of multiple distribution channels and demanding an ever-increasing variety of complex products.

### **2.4.3 Customer Needs and Wants**

Information communication technology has allowed commercial banks in Kenya to offer a wide array of options to their banking customers. Some customers will rely on traditional branches to conduct their banking business. For many, this is the most comfortable way for them to transact their banking business. Those customers place a premium on person-to-person contact. Other customers are early adopters of new technologies that arrive in the marketplace. These customers were the first to obtain PCs and the first to employ them in conducting their banking business. The demographics of banking customers will continue to change. The challenge now is for the banks like equity is to understand their customers' needs and wants and finding the right mix of products and services for them.

#### **2.4.4 Cost**

Players in the Kenyan banking sector can deliver banking services on the Internet at transaction costs far lower than traditional brick-and-mortar branches. The actual costs to execute a transaction will vary depending on the delivery channel used. For example, according to Booz, Allen & Hamilton, as of mid-1999, the cost to deliver manual transactions at a branch was typically more. ATM and call center transactions cost lesser money, and Internet transactions cost even much cheaper and they are expected to continue declining.

The usage of ICT can lead to lower costs, but the effect on profitability remains inconclusive owing to the possibility of network effects that arise as a result of competition in financial services. The relationship between ICT expenditures and bank's financial performance or market share is conditional upon the extent of network effect. If the network effect is too low, ICT expenditures are likely to (1) reduce payroll expenses, (2) increase market share, and (3) increase revenue and profit. With better-quality products and services, Banks should be able to charge more, all else equal. In the case of ATMs, the improved features and increased usage means the banks should expect to receive increase fee revenue for processing customer transactions. But the proliferation of ATM networks also allowed banks to reach customers outside the geographic markets served by their branches. This created the opportunity for greater price competition, as consumers could choose the lowest-cost provider rather than a neighborhood bank.

Online banking may have a similar effect on revenues. As people become comfortable shopping and applying for products such as mortgages and credit cards online, these products may turn into commodities, and reduce the profit margins that banks previously enjoyed. In the end, the impact on revenues depends on whether the higher prices associated with new and better products outweigh the lower prices that come with increased competition. Customer can therefore benefit as result of ICT to save time, save money (postage, late fees, and check printing fees), can track their transactions and budgeting, and make their financial life easier.

#### **2.4.5 Use of Information Communication Technology to gain Competitive advantage**

Banking and financial service is an extremely competitive business. Studies show that competitive pressure is the chief driving force behind increasing use of IT in banking, ranking ahead of cost reduction and revenue enhancement, in second and third place respectively. Banks see ICT as a way to keep existing customers and attract new ones to the bank. Facing extremely intensive competition from other banks and non-banking sector players, Equity has adopted a more aggressive approach in the development of new e-banking services. For instance, the bank has started to install advanced software to process all consumer loan applications online, a new paperless e-loan process.

In UK, banks now view e-banking from new distribution channel before to new business models in which e-banking service is considered together with banks' strategic planning, business process, and product/service package offering (Li, 2002; Brown *et al.*, 2004). The researcher recognizes that banks are investing heavily in ICT solutions as they expect to use their systems to gain competitive advantage. With the success of ATMs, banks had the incentive to develop new products and new delivery channels, such as home banking via phone and Personal computer, ATM networks allows banks to reach new customers outside the markets served by their branches and creates the opportunity for greater price competition.

### **2.5 Empirical Review**

#### **2.5.1 Studies Related to Banks:**

Dannenber and Kellner (1998), in their study, overviewed the opportunities for effective utilization of the Internet with regard to the banking industry. The authors evaluated that appropriate application of today's cutting edge technology could ensure the success of banks in the competitive market. They evaluated the services of banks via internet as websites provide sophisticated line of products and services at low price. The authors analyzed that transactions via internet reduce the risk of data loss to customers, chance to cut down expenses, higher flexibility for bank employees,

re-shaping the 43 banks' image into an innovative and technologically leading institutes, etc. The researchers found that banks could move one step further by entering into a strategic alliance with internet service provider. So, the bank of tomorrow stands to be feasible with today's technology.

Sathye (1999), in his research paper, explored the factors affecting the adoption of internet banking by Australian customers. The author stated that internet and other virtual banking had significantly lower the cost structure than traditional delivery channels. So, the banks should encourage customers to use internet for banking transactions. The author also emphasized that for adoption of internet banking, it was necessary that the banks offering this service made the consumers aware about the availability of such a product and explain how it adds value to the other products. The analysis of the study showed that security concerns and lack of awareness stand out as the reasons for non-adoption of internet banking by Australian customers. However, internet should be considered as a part of overall customers' service and distribution strategy. These measures could help in rapid migration of customers to internet banking resulting in considerable saving of operating costs of banks.

Aki (2002) highlighted the impact of technology in banking sector. New technologies cannot replace the branch network but these can support old methods of delivering the services. The author evaluated the structural change in Finnish banking sector from the period 1993 to 2002 which showed that 42 per cent of households have internet connection with banks and 90 per cent have mobile banking services. ICT has had both inter-sectoral and intra-sectoral impact. The author concluded that main goals of management of technology were to improve customer satisfaction, reduce cost and develop new methods to collect and analyze the customer information.

Suresh (2008) highlighted that recently developed e-banking technology had created unpredicted opportunities for the banks to organize their financial products, profits, service delivery and marketing. The objectives of the study were to evaluate the difference between traditional and e-banking, and to identify the core capabilities for the best use of e-banking. The author analyzed that e-banking will be an innovation if it preserved both business model and technology knowledge, and disruptive if it destroys both the model and knowledge. He also differentiated e-banking from



traditional banking in five ways, namely, value proportion, market scope, cost structure, profit potential and value network. However, in order to exploit technical and business capabilities of e-banking, banks should generate more customers inside and outside India so that more revenues could be generated that lead to better future of Indian economy.

### **2.5.2 Studies Related to Customers:**

Simon and Victor (1994) examined the reasons why ATM card holders accept or reject EFTPOS and how they viewed the risk of EFTPOS when compared to credit and cash. The authors signified that more marketing research and consumer participation was needed in designing and introducing e-banking services so as to gain more user acceptance. They signified that in order to reduce fears in the minds of people regarding security, it was required to introduce risk reduction techniques such as money back guarantee, live demonstration and free trial to reduce psychological, financial and time loss risk. The researchers suggested that to prove e-payment methods more successful, it should be based on proper marketing risk, prompt service support, sufficient legal protection and awareness.

Krishnan (2001) examined the evolution of E-banking in Malaysia and analyzed the various electronic delivery channels used by local banks to assess the consumer reaction to these delivery channels. The objective of the study was to present progressive development of e-banking, electronic delivery channels and some pertinent issues for successful implementation of E-banking. The study was based on a sample of 300 bank customers, and revealed that 90 per cent of respondents visit their bank branches at least once every month, 63.3 per cent customers indicated four or more visits to ATMs every month, 20 per cent of the respondents were using tele-banking services. Only 6.7 per cent customers indicated that they would not be interested at all using these services. The 52 results showed that among different channels of e-banking like mobile banking, internet banking, ATM's, PC banking; ATMs were widely accepted by the people. The researcher also found that bank branches and interaction with human tellers were still important. 60 per cent of the respondents had internet access at home and it presents a positive indication of PC banking in future. The author concluded that for successful implementation of e-banking, the major prerequisites were legal and physical infrastructure because e-banking requires a lot of tangible and technological changes in banks.

Erickson et al. (2005) studied the technology acceptance of internet banking in Estonia. The objective of the study was to see that to what extent customers accept internet banking as a tool for the satisfaction. The findings of the study suggested that internet banking proved to be beneficial for the customers. However, banks need to put much efforts not only into making a user friendly internet bank, but also to explain their customers how the internet bank was useful to them.

Walter (2006) evaluated why people use or choose technology enabled services like internet banking, telephone bill paying and internet shopping service. The author used a behavioural model for the study. The findings of the study showed that customers' adoption rate to use internet and telephone banking was influenced by their willingness to use service, their personal capacity to engage in the service, the risks and advantage involved in the services. The paper also brings out depict that while choosing technology enabled services, customers want convenience, time saving, faster service and security.

The author concluded that for more use of technology enabled services, it should make more customers friendly, reduce the system complexity and undue waiting time involved in the service handling.

Liao and Wong (2007) empirically explored the major considerations associated with internet-enabled e-banking systems and systematically measured the determinants of customer interactions with e-banking services. In order to study customers' interaction with internet banking, the respondents were asked to explain the extent of using internet banking services. The results suggested that perceived usefulness, ease of use, security, convenience and responsiveness to service requests significantly explained the variation in customer interactions. Exploratory factor analysis and reliability test indicated that these constructs were relevant and reliable. Confirmatory factor analysis confirmed that they possessed significant convergent and discriminatory validities. Both perceived usefulness and perceived ease of use have significant impact on customer interactions with e-banking services. Perceived security, responsiveness and convenience also represented the primary avenues influencing customer interactions. In particular, stringent security control was critical to e-banking operations. The findings had managerial implications for enhancing extent of e-banking operations and developing viable e-banking systems and services.

### **2.5.3 Studies Related to Service Quality**

Joseph et al. (1999) evaluated the impact of electronic banking on the service delivery by the banks to its customers. Researchers reviewed that when customers were in direct contact with the technology (such as internet banking), they can exercise better control, whereas when there was absence of direct contact (such as telephone banking), lesser control was perceived. A sample of 440 electronic banking customers was taken, and 300 usable questionnaires were analyzed. Six factors model was used to adequately represent the data and the factors chosen were convenience, accuracy, efficiency, queue management, accessibility and customization. The study examined customers' perception for electronic banking services, attributes of electronic banking services and consumer perception of e-banking. The study suggested that banks should provide statements of all transactions; customers should be provided toll free numbers; and banks should also develop electronic banking facilities to meet the needs of elderly and disabled people.

Mantel (2000), in his study, proposed a framework for describing why consumers use electronic banking products such as electronic bill payment, credit cards, debit cards, stored value and e-cash for their banking needs. The author explained that consumer behavior was consistent with their preference, which includes convenience, incentives, control, privacy, security and personnel involvement. The paper suggested that consumers make rational decisions regarding the use of alternative of E-payment instruments rather than irrationally resistant to change. Migration towards electronic banking products was more dependent on establishing business cases rather than overcoming consumer reluctance. Further, the study provided that greater control, convenience and communication power were some of the reasons which made the consumers shift to electronic payment products.

Bauer et al. (2005), in their study, validated a measurement model for the construction of website portals quality based on three dimensions that were core services, additional services and problem solving services. These dimensions were major determinants of consumer quality perception for e-banking services. However, security, trustworthiness represented the basic demands of portal users. E-banking web-portal represented a bundle of services and functions. It could not be described as a one dimensional customer rating. In fact, it was represented by multi-dimensional and multi-factor

construct. The author concluded that by comparing e-service quality model with traditional service quality model, more detailed insights in the field of quality perception were required in order to have detailed vision about quality.

## **2.6 Summary of Literature Review**

This chapter reviewed the literature on ICT and banking with its effect on efficiency and budgets of banks being reviewed. The driving forces behind the rapid transformation of information communication technology in banking include innovations in information communication technology thus developing different products and services, the quest to for banks to manage costs and as well the view of the customer to adopt cheaper priced products so as to save on cost, the ever changing customer needs and wants, the demand for quality service delivery, the need for banks to manage competition. These factors should enable commercial banks design a winning strategy.

With unforeseen developments and changes in the economic environment and social spectra, the strategies must be flexible to adjust to these changes. The question is not any more whether the emergence of Information communication technology has been a threat or an opportunity as those who have decided to protect themselves from the threats instead of using the opportunities are determined to vanish from the market place. As a result of the ever changing technology, the banking industry in Kenya from time to time conduct research and developing new ways and uses of this versatile factor, failure of which might render them obsolete and laggards. Commercial banks could also promote these e-banking products and services by creating more awareness. This promotion could eventually, make more people embrace these e-banking products.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter sets out a description of the research methodology. It sets out ways to evaluate the effect of information communication technology in the banking sector in Kenya. Research methodology provides details regarding the procedures that were used in conducting the study, Mutai (2000) states that research methodology is a specific plan for studying the research problem and constitutes the blue print for the proposed data collection, measurement and analysis of the data. Included in the methodology section are descriptions of the research design, the population, the sample and sampling techniques, and a description of instruments or tools used to collect data, the measurement of variables and the techniques to be used in analyzing the data.

#### **3.2 Research Design**

The research problem was studied by use of a descriptive research design. Descriptive research according to Mugenda & Mugenda, 2003 is the investigation in which quantitative data is collected and analyzed in order to describe the specific phenomenon in its current trends, events and linkages between different factors at the current time. Descriptive research design enables the researcher to generalize findings to a larger population. The descriptive design approach has been credited to the fact that it allows analysis and the relations of variable.

#### **3.3 Population**

The population of the study consisted of all commercial banks in Kenya. As at 31/12/2012 there were 43 commercial banks in Kenya. The target population of this study therefore was the 43 commercial banks in Kenya (Appendix II)

### 3.4 Data Collection

Primary data was used in this study. The study used primary data, which was captured through semi-structured questionnaires. The questionnaire consists of both closed and open ended questions. The questionnaire includes structured and unstructured questions that were administered through drop and pick method to respondents (operation managers in the banks) This enabled the researcher to collect quantitative data while open-ended questions enabled the researcher collect qualitative data (Appendix 1)

### 3.5 Data Analysis

The data gathered from the respondents was analyzed and presented using descriptive statistics. Cramer and Howitt (2004) have suggested that descriptive studies be analyzed using descriptive statistics. Descriptive statistics include tabulation and organization of data in order to demonstrate their main characteristics and involves use of techniques such as measures of central tendency, measures of dispersion, correlation and graphical presentations.

#### 3.5.1 Analytical Model

The study involved the use of linear regression analysis. The regression equation was;

$$Y = a + B X + \epsilon$$

**Where;**            **a**-Constant

**Y**-The dependent variable (Efficiency, output and customer turnout in Commercial Banks in Kenya)

**X**-No of ICT products and service delivery

**B** – Strength of relationship between variables

$\epsilon$  - error

Regression analysis was done. The b coefficient from the equation above will represent the strength and direction of the relationship between the variables. Assuming that the error term in the linear regression model is independent of  $x$ , and is normally distributed, with zero mean and

constant variance, we will decide whether there is any significant relationship between  $x$  and  $y$  at 0.05 significance level by testing the null hypothesis that  $\beta = 0$ .

<b>Variable</b>	<b>Measurement</b>	<b>Formula</b>
<b>X</b>	ICT usage	ICT Products
<b>Y</b>	Efficiency	Efficiency, output and customer turnout in Commercial Banks in Kenya

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND INTERPRETATION

#### 4.1 Introduction

This chapter presents and documents the findings, recommendations and conclusions on the relationship between information communication technology usages on productivity among commercial banks in Kenya. The study recorded a response of 80 %.

#### 4.2 Extent in which Commercial Banks have emphasized on the ICT methods in the past 5 years.

This part sort to understand the reason behind commercial banks in Kenya adopting ICT methods

**Table 4.1 Extent of ICT usage**

<b>Extent</b>	<b>Frequency</b>	<b>Percentage</b>
Very great extent	<b>12</b>	<b>37.5</b>
Great extent	<b>19</b>	<b>59.4</b>
Moderate extent	<b>1</b>	<b>3.1</b>
Little extent	<b>0</b>	<b>0</b>
No extent	<b>0</b>	<b>0</b>
Total	<b>34</b>	<b>100</b>

**Source: Research Findings**

The researcher found out that commercial banks needed to enhance their efficiency in operations so as to gain profits, and for improvement of service delivery and in meeting the customer's demands with minimal costs. The other reason behind adoption of ICT was to validate customer's account numbers, account opening and debit card requisition. The ICT methods have also brought into place services like Electronic fund transfer, Automated teller machine closer to clients thus reducing expenses by reducing expenses and associated costs hence an overall reduction of operational expenses.



#### 4.1.1 How ICT has improved Competition, Value Creation and Operational Efficiency

This section sought to understand the level to which ICT improved competition among banks, value creation and operational efficiency in the changing banking environment.

The results are shown in Table 4.2

**Table 4.2 ICT Improvement on Competition, Value Creation and Operational Efficiency**

<b>Extent</b>	<b>Extent</b>	<b>Frequency</b>	<b>Percentage</b>
Very great extent	Very great extent	<b>16</b>	<b>47</b>
Great extent	Great extent	<b>11</b>	<b>32</b>
Moderate extent	Neutral	<b>6</b>	<b>18</b>
Little extent	Disagree	<b>1</b>	<b>3</b>
No extent	Strongly disagree	<b>0</b>	<b>0</b>
<b>Total</b>	<b>Total</b>	<b>34</b>	<b>100</b>

**Source: Research Findings**

The research found out that improvement on competition, value creation and operational efficiency as a result of introduction of ICT. This was mainly due to the fact that software’s are able to generate daily reports thus becoming more efficient in the operation of the banks. The ICT in the banking systems in Kenya was designed to integrate all technologies by having interfaces for them the interface include but not limited to POS, ATM, smart, debit and credit card interfaces, electronic fund transfer RTGS integration with other banks thus easing integration of ICT in banking sector in Kenya.

#### 4.1.2 The extent to which ICT banking has improved efficiency in Service Delivery, Quality, Confidentiality and Convenience

This section sought to get the level of extent in which ICT banking has improved efficiency in service delivery, quality, confidentiality and convenience in commercial banks .The results are shown in Table 4.3

**Table 4.3 Extent to which ICT banking has improved efficiency in Service Delivery, Quality, Confidentiality and Convenience**

<b>Extent</b>	<b>Frequency</b>	<b>Percent</b>
Very great extent	<b>12</b>	<b>35</b>
Great extent	<b>18</b>	<b>53</b>
Moderate extent	<b>3</b>	<b>9</b>
Little extent	<b>1</b>	<b>3</b>
No extent	<b>0</b>	<b>0</b>
Total	<b>34</b>	<b>100</b>

**Source: Research Findings**

The research found out that service and information had become more efficient, reliable and improved due to ICT bringing about capturing and delivering more data compared to manual process. This would lead to timely and sufficient data for planning and strategy formulation.

ICT in banking sector requires more information on the clients, thus making it easy and possible to analyze data like the lending patterns, location of ATM’s thus capturing accurate information and analysis of various aspects.

The researcher found out that with the opening of self service points, customers will be charged less than what they would be charged in the banking hall. Thus convenient and comfortable for clients who wanted faster service and did not entering the bank, the withdraw hours were also made flexible and it brought the services closer to clients.

**4.2 Effects of ICT on Financial Function in Commercial Banks in Kenya.**

This study sought to find out the effects of ICT on financial functions in commercial banks in Kenya, The section sought the opinion as to whether ICT had improved cost reduction in terms of service delivery to clients. The results are shown in table 4.4

**Table 4.4 Effects of ICT on financial functioning in commercial banks in Kenya**

<b>Extent</b>	<b>Frequency</b>	<b>Percentage</b>
Very great extent	<b>10</b>	<b>29</b>
Great extent	<b>13</b>	<b>39</b>
Moderate extent	<b>8</b>	<b>25</b>
Little extent	<b>2</b>	<b>7</b>
No extent	<b>0</b>	<b>0</b>
Total	<b>34</b>	<b>100</b>

**Source: Research Findings**

The researcher found out that ICT adoption had contributed to improvement in financial functions for various activities. A scale of 1-5 was used in rating between ICT expenditure and bank's financial performance on market share. The scores "very greater extent" and "greater extent" were represented by mean score equivalent to 1 to 2, "moderate extent", "little extent" and "no extent" were represented by 3,4 and 5 respectively.

The results and their means are shown in table 4.5

**Table 4.5 Effects of ICT on financial functioning in commercial banks in Kenya**

	<b>Mean</b>
Automated Teller Machine	1.31
Electronic Funds Transfer	1.46
Smart Cards	2.13
Telephone Banking	2.34
MICR	2.46
Electronic office banking	2.59
Electronic Home banking	3.12
Electronic Data Interchange	3.38

**Source: Research Findings**

The researcher found out ICT has improved financial functioning and services through the ATM's since they could access and process funds quickly through the ATM ,EFT, Smart cards, telephone banking, MICR, Electronic office banking Electronic Home banking and Electronic Data Interchange .

### 4.3 Effects if ICT on Service delivery in Commercial Banks in Kenya.

This section sought to get the level in which ICT affects service delivery in commercial banks in Kenya. The results are shown in table 4.6

**Table 4.6 Effect of ICT on Service Delivery in commercial banks in Kenya**

<b>Extent</b>	<b>Frequency</b>	<b>Percentage</b>
Very great extent	<b>13</b>	<b>38</b>
Great extent	<b>15</b>	<b>44</b>
Moderate extent	<b>5</b>	<b>15</b>
Little extent	<b>1</b>	<b>3</b>
No extent	<b>0</b>	<b>0</b>
Total	<b>34</b>	<b>100</b>

**Source: Research Findings**

The research found out that with the adoption of ICT in the Kenyan banking sector enhances customer service thus ensuring they are par with competitors, thus need to adopt and use to maximum the available ICT in order to increase competitive advantage and service delivery to clients

#### 4.3.1 Rating the role of ICT in helping commercial banks deliver good services

This section is a likert scale that rated the role of ICT technique in helping Commercial banks delivers good services thus productivity and competitive advantage. The results were shown below. A scale of 1-5 was used in rating ICT in relation to service delivery. The scores “Very great extent” and “Great extent” were represented by a mean score; equivalent to 1 to 2.5. The scores for “Moderate extent” and “Little extent” were presented by a mean score, equivalent 3.1 to 4.2.

**Table 4.7 Rating the role of ICT in helping commercial banks deliver good services**

<b>Extent</b>	<b>Frequency</b>	<b>Mean</b>
Very great extent	<b>13</b>	<b>1</b>
Great extent	<b>15</b>	<b>2.5</b>
Moderate extent	<b>5</b>	<b>3.1</b>
Little extent	<b>1</b>	<b>4.2</b>
No extent	<b>0</b>	<b>0</b>
Total	<b>34</b>	<b>10.8</b>

**Source: Research Findings**

From the table 4.7 The researcher found out that ICT had improved and helped in great extent service delivery in banks, banks had improved customer services and products like online payment and also ICT had helped in designing future products which would be paid online through online banking systems.

#### **4.4 Effect of ICT on Customer Service in Commercial Banks in Kenya.**

This section sought to get the effect of ICT on customer service in commercial banks in Kenya. The results are shown in Table 4.8

	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
Automated Teller Machine	34	43	2.4
Smart Cards	34	43	4.3
Telephone Banking	34	43	2.8
Electronic Fund Transfer	34	43	3.1
Electronic Home Banking	34	43	4.6
Electronic Office Banking	34	43	4.7

**Source: Research Findings**

From the Table 4.8 ATM was rated highly in helping banks serve their customers, this was represented by a mean of 2.4. On the other end Electronic Office Banking(4.7) and Electronic Home Banking(4.6) were rated as low in contributing to effective service delivery to customers.

The researcher through the findings found out that ICT would not create a sustainable customer service delivery and thus a continuous innovation was required.

#### **4.5 Interpretation of Findings**

Empirical findings suggest that some of the main effects of ICT diffusion are organizational changes and the redefining of organizational boundaries. Thus, it is relevant to assess if the diffusion of ICT in the banking industry had any impact on the restructuring process. The impact on value chain reflects inre-shaping firm boundaries and changing the constellations of value chains are enormous. From table 4.1, only 37.5% of the respondents agree that value added services/special accounts encourage them to patronize the bank. This customer perception needs to be improved upon by more extensive publications on these value added service so as to complement the impact of ICT. The number of branches a bank has is another value chain that enhances the impact and level of deployment of ICT

Innovations enabled by ICT changes the cost structure of companies. Hence, innovations have a significant impact on the market structure in which companies operate. Radical changes in technology traditionally lead to emergence of new products or change the production processes of existing products. In either case, companies face a large degree of uncertainty regarding future demand or cost of service delivery. Furthermore, during times of technological change, mergers reflect the process of assets reallocation toward more efficient firms. The mergers Technological change forces firms to adopt new modes of production and, consequently, to reorganize its assets. If a company fails to reorganize internally, it will probably disappear from the industry and its assets will be reorganized externally. New technology spreads faster if such asset reallocation works smoothly. The efficiency of ICT is technological change that has greatly revolutionized the banking sector. Table 4.3 above indicates that 35% of the respondents agree That to a greater extent the bankshave improved the quality of service rendered. This is necessary for the bank to retain its customer as well as attract potential one

Thus, banks need to employ ICT in such a way that meets the desired qualities of flexibility and scalability, providing them with a competitive advantage to stay ahead and provide new and improved products and services to delight their customers. It must however be noted that ICT

investment does not lead to productivity growth at firm-level by itself. It depends on how the technology is actually used in business processes, i.e. on a company's ability to innovate its work processes and business routines with support of ICT.

Thus, only if ICT investment is combined with complementary investment in working practices, human capital, and firm restructuring will it have an impact on performance. The finding of this study indicates that basic ICT infrastructures such as computer and peripherals, local area networks, and ATMs are crucial to the operations of banks. However, the case studies indicate that to meet the ever increasing sophistication of customers, new government policies and stay competitive in a fast changing economy, a scalable, flexible and robust ICT solution is essential.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the discussion of the study findings, conclusion and recommendations

#### 5.2 Summary

From the study it was evident that ICT had led to cost reduction in terms of service delivery to the bank's clients. These findings in line with that of Brynjolfsson and Hitt (2000), who said that ICT has the capacity to cut costs of coordination, information processing and communication and many businesses have taken advantage of this. In addition, Schultz (1975) anticipated that educated workers are likely to be best-equipped to respond to the new product development opportunities made possible by ICT. Internet based interaction and real-time communication can reduce information asymmetries between buyers and suppliers and build closer relationships among trading partners. Adopters of e-commerce tend to reduce transaction costs, increase transaction speed and reliability

The study established that the use of Automated Teller Machine contributed to great extent customer service. This is in line with Irechukwu (2000) who listed some banking services that have been revolutionized through the use of ICT as including account opening, customer account monitoring and transaction processing and recording. He adds that ICT has provided self-service facilities from where customers can validate their account numbers and receive instructions on when and how to receive their credit and debit cards and cheque books.

In addition, Litan (1999) described the introduction and rapid use of ATM as the most visible revolutions in banking sector. He also supported his claim by stating that ATMs offer consumers the convenience of banking in many more locations than ever before and are cheap to operate than a bank branch. Today nearly 200,000, ATMs are found throughout the country, more than collective number of bank branches and credit unions.



Maria Gloria Cobaset al (2001) have generalized some driving force behind bank's decisions to install ATMs in the United States. According to the authors: "...in early 1970s, when rising inflation and interest rates made it more difficult for consumers to borrow reduced customer loyalty to their local banks. These changes in economic conditions and consumer attitudes stimulated competition among financial institutions

From the study it was evident that ICT adoption in banks has led to improvement of operational efficiency. This finding is in line with comunale (2004) who argues that ICT in banking has increased efficiency and reduced information cost, although it still remains an under-utilized resource. In addition, Woherem (2000) adds that operational efficiency isn't just about making cuts. It is also about doing things smarter and looking at new ways of working and delivering services. ICT is key to innovation and as an integral part of business, offers new opportunities that not only drive efficiencies but can also contribute to improved and efficient service delivery

The study evidently established that ICT in the banking industry had increased their competitiveness. This finding is in relation to many studies available in current literature which shows that there is growing support for the positive relationship between ICT and competitive advantage. (in and Lin(2006) stated that ICTs have value to organizational advantage. According to Tan et al (2009), with the strong waves of liberalization and globalization across the world. ICT is believed to be the most cost-efficient tool to help companies gain bigger markets and ability to compete with larger organizations in attracting customers to their information, products and services

### **5.3 Conclusion**

From the discussions of the study, the researcher makes the following conclusions;

ICT adoption in banks has a direct impact on customer service. This is evident through the use of ATMs which boost customer service. Irechukwu (2000) listed some banking services that have been revolutionized through the use of ICT as including account opening, customer account mandate, and transaction processing and recording.

Secondly the researcher concludes that cost cutting is a major factor that influences adoption and use of ICT .The need to maintain low operational costs is a primary objective of any micro financed institution. ICT has the capacity to reduce operational costs, cost of coordination and communication and information processing and many businesses had taken advantage of this

Thirdly,ICT to a great extent influences competitive advantage; this has been through forecasting and also placing banks in level with other players in the financial sector. This finding is in relation to many studies available in current literature which show that there is growing support for the positive relationship between ICTs and advantage that is ICT has value to organizational advantage.

#### **5.4 Recommendations for Policy**

The following recommendations for policy were made based on the findings and conclusion of the research study.

First, the capacity to manage technologies is a key in the usage of ICT's in banks Martin and Matlay,(2001).The supply of qualified people in ICT remains small, and the reason for the high labour costs. As a result many banks cannot engage full time qualified ICT personnel. This affects the extent of ICT usage in banks. There is need policy makers to develop policies that will increase the number of qualified ICT personnel, such as encouraging many institutions to start ICT related courses, and tertiary institutions working hand in hand with banks and other stakeholders to develop an ICT banking curriculum that provide appropriate ICT banking skills relevant to the industry and meet the current and future needs of banks in Kenya.

Secondly, the Government and donors must be encouraged to support the software development activities and in particular the capacity developments of skilled labour in ICT applications, and thereafter encourage banks to adopt ICT banking application in their operations. Donors and government must promote awareness campaigns on the benefits associated with ICT banking for success of banks.

Thirdly, Commercial banks can get maximum benefit by investing in technology and putting in a better ICT banking solutions that work for them.

### **5.5 Limitations of the Study**

One of the major limitation was confidentiality of organizational information. There was unwillingness of informants from some banks to give information and fill questionnaire.

Some respondents feared that the information obtained would be used against them; this scared away respondents from filling them thus the researcher had to assure them that the information provided would be confidential to reduce the fear.

### **5.6 Recommendation for Further Research**

Implementing an ICT policy in banks requires a long-term commitment from various levels of government; therefore, there is need for a research on ICT program implementation in terms of management needs and program enhancement. A sound evaluation strategy of the ICT program, with achievement standards and performance indicators, which will help in providing accountability. It will also be of great value for the program's management team once it gets into its implementation stages.

Further research is necessary as the findings were as the findings were based on a relative small sample that may have influenced the nature of results that were obtained. There is need to expand on the sample size and carry out similar research in banks and other financial institutions.

Further research focusing on the inferential analysis is necessary to study the ICT usage in banks with a focus on age, size and location of banks. ICT banking adoption in banks, and appropriate technologies and ICT solutions that are feasible for banks to meet the dual objectives of sustainability and outreach in Kenya.

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## APPENDICES

### Appendix I: Questionnaire

#### PART A: GENERAL INFORMATION

1. Name of the Bank.....

2. What is your designation? .....

3. For how long have you been working in the bank?

Less than a year [ ]

Between 1 and 5 years [ ]

Between 6 and 10 years [ ]

Above 10 years [ ]

4. What is the level of your education?

Diploma [ ]

Undergraduate level [ ]

Graduate level [ ]

Masters [ ]

Others.....

#### SECTION B: EXTENT OF APPLICATION OF ICT IN COMMERCIAL BANKS IN KENYA OVER THE PAST 5 YEARS

1. To what extent has your bank embarked on information communication and technology over the past 5 years?

To a very great extent [ ]

To a great extent [ ]

To a moderate extent [ ]

To a little extent [ ]

To no extent [ ]



2. To what extent has your bank emphasized on the following information communication and technology over the past 5 years? Use a scale of 1 to 5 where 1 is to a very great extent and 5 is to no extent

<b>ICT Methods</b>	1	2	3	4	5
Systems security and integrity					
Database management systems					
Electronic fund transfer					
Automated teller machines					

3. To what extent have the following factors influenced the extent use of ICT in your bank? Use a scale of 1 to 5 where 1 is to a very great extent and 5 is to no extent

<b>Factors</b>	1	2	3	4	5
Competition from other banks					
Value creation					
Need Efficiency and innovation					
Changing banking environment					

4. To what extent has ICT contributed to the following aspects about financial services provision? Use a scale of 1 to 5 where 1 is to a very great extent and 5 is to no extent

<b>Statement</b>	1	2	3	4	5
Efficiency in services delivery					
Improvement in service quality					
Confidentiality					
Convenience					

**SECTION B: EFFECT OF ICT ON FINANCIAL FUNCTION IN COMMERCIAL BANKS IN KENYA**

1. The relationship between ICT expenditure and bank’s financial performance or market share is conditional upon the extent of network effect. Use a scale of 1 to 5 to indicate the extent to which you agree with the above statement where 1 is strongly agree and 5 is strongly disagree.

- To a very great extent [ ]
- To a great extent [ ]
- To a moderate extent [ ]
- To a little extent [ ]
- To no extent [ ]

**SECTION C: EFFECT OF ICT ON SERVICE DELIVERY IN COMMERCIAL BANKS IN KENYA**

1. Rate the extent to which ICT affects the service delivery

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Service delivery					
Service Quality					
Reduction of congestion in the Banking Halls					

2. How has ICT affected the service delivery and differentiation in your bank?

- To a very great extent [ ]
- To a great extent [ ]
- To a moderate extent [ ]
- To a little extent [ ]
- To no extent [ ]

**SECTION D: EFFECT OF ICT ON CUSTOMER SERVICE IN COMMERCIAL BANKS  
IN KENYA**

1. How does the adoption of ICT contributed to improvement in customer service in the following areas?

	Very positively	Positively	Neither positively nor negatively	Negatively	Very Negatively
Automated Teller Machine					
Smart Cards					
Telephone Banking					
Electronic Fund Transfer					
Electronic Home Banking					
Electronic Office Banking					

## **Appendix II: List of Commercial Banks in Kenya**

- 1 ABC Bank (Kenya)
- 2 Bank of Africa
- 3 Bank of Baroda
- 4 Bank of India
- 5 Barclays Bank
- 6 Brighton Kalekye Bank
- 7 CFC Stanbic Bank
- 8 Chase Bank (Kenya)
- 9 Citibank
- 10 Commercial Bank of Africa
- 11 Consolidated Bank of Kenya
- 12 Cooperative Bank of Kenya
- 13 Credit Bank
- 14 Development Bank of Kenya
- 15 Diamond Trust Bank
- 16 Dubai Bank Kenya
- 17 Ecobank
- 18 Equatorial Commercial Bank
- 19 Equity Bank
- 20 Family Bank
- 21 Fidelity Commercial Bank Limited
- 22 Fina Bank
- 23 First Community Bank
- 24 Giro Commercial Bank
- 25 Guardian Bank
- 26 Gulf African Bank
- 27 Habib Bank
- 28 Habib Bank AG Zurich
- 29 I&M Bank

- 30 Imperial Bank Kenya
- 31 Jamii Bora Bank
- 32 Kenya Commercial Bank
- 33 K-Rep Bank
- 34 Middle East Bank Kenya
- 35 National Bank of Kenya
- 36 NIC Bank
- 37 Oriental Commercial Bank
- 38 Paramount Universal Bank
- 39 Prime Bank (Kenya)
- 40 Standard Chartered Kenya
- 41 Trans National Bank Kenya
- 42 United Bank for Africa
- 43 Victoria Commercial Bank

**Source: (CBK, 2012)**