

**IMPACT OF INFORMATION COMMUNICATION AND TECHNOLOGY ON COST
EFFICIENCY OF COMMERCIAL BANKS IN KENYA**

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DECLARATION

This project is my original work and has not been submitted for a degree in any other University.

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This project has been submitted for examination with my approval as the University Supervisor.

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I wish to thank my supervisor Mr. Lishenga for his guidance, support and patience in the course of this project. I also wish to thank colleagues who read and commented on my work. May the Almighty bless you all.

DEDICATION

I dedicate this work to my family. Your support and encouragement gave me energy to work harder.

ABSTRACT

This study sought to establish the extent of application of ICT and determine its impact on financial function in commercial banks in Kenya. The objectives of the study were to evaluate the impacts of ICT adoption on cost efficiency of commercial banks operating in Kenya, to find out the major challenges experienced by banks in the adoption and implementation of ICT, and to suggest the possible measures which can be applied to minimize the challenges experienced in adoption of ICT in order to foster efficiency of the banks' operations. The study used a descriptive research design to achieve these objectives. The population of the study consisted of all commercial banks in Nairobi. Purposive sampling was used to select operations manager for this study. The sample size of this study was 45 respondents.

Data was obtained through self-administered questionnaires with closed and open-ended questions. Descriptive statistics such as means, standard deviation and frequency distribution were used to analyze the data. Results were presented by the use of pie charts, bar charts and graphs, percentages and frequency tables.

This study found that banks have embarked on ICT to a very great extent. Database management systems, automated teller machines, system security and integrity have been emphasized in ICT adoption by banks. ICT was found to be critical in service delivery and reducing congestion in banking halls. On contribution of ICT to financial services, convenience, efficiency in service delivery and improvement in service quality were found to be critical. This study recommends that further study be carried out to establish why there seem to be reluctance in adoption of ICT for electronic funds transfer. Equally, banks should device means of using ICT in improving service quality.

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LIST OF ACRONYMS

IT: Information Technology

ICT: Information, Communication and Technology

NSE: Nairobi Stock Exchange

CHAPTER ONE

2.0 INTRODUCTION

1.1 Background

The usage of information communication and technology (ICT), broadly referring to computers and peripheral equipment, has seen tremendous growth in service industries in the recent past. The most obvious example is perhaps the banking industry, where through the introduction of ICT related products in internet banking, electronic payments, security investments, information exchanges (Berger, 2003), and banks now can provide more diverse services to customers with less manpower. Seeing this pattern of growth, it seems obvious that ICT can bring about equivalent contribution to profits.

In general, existing studies have concluded two positive effects regarding the relation between ICT and banks' performance. First, ICT can reduce banks' operational costs (the cost advantage). For example, internet helps banks to conduct standardized, low value-added transactions (e.g. bill payments, balance inquiries, account transfer) through the online channel, while focusing their resources into specialized, high-value added transactions (e.g. small business lending, personal trust services, investment banking) through branches. Second, ICT can facilitate transactions among customers within the same network (the network effect) (Farrell and Saloner, 2002; Economides and Salop, 2001). For example, the value of an ATM network increases with the number of available ATM locations, and the value of a bank's network to a customer will be determined in part by the final network size of the bank. Indeed, Saloner and Shepard (2002), using data for United States commercial banks for the period 1971-1979, showed that the concern of network effect is important in the ATM adoption of United States commercial banks.

Information and Communication Technology or ICTs allow users to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technologies. ICT tools can be used to find, explore, analyze, exchange and present information responsibly and without discrimination. ICT can be employed to give

users quick access to ideas and experiences from a wide range of people, communities and cultures. ICT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit, and securely retrieve information (Oliner and Sichel, 2000).

Today, the term information has ballooned to encompass many aspects of computing and technology, and the term has become very recognizable. ICT professionals perform a variety of duties that range from installing applications to designing complex computer networks and information databases. A few of the duties that ICT professionals perform may include data management, networking, engineering computer hardware, database and software design, as well as the management and administration of entire systems. Information and communication technology is starting to spread farther than the conventional personal computer and network technology, and more into integrations of other technologies such as the use of cell phones, televisions, automobiles, and more, which is increasing the demand for such jobs (Harris, 2001).

When computer and communications technologies are combined, the result is information technology, or "infotech". Information and communication technology is a general term that describes any technology that helps to produce, manipulate, store, communicate, and/or disseminate information. The Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK), govern the Banking industry in Kenya. The banking sector was liberalized in 1995 and exchange controls lifted. The CBK, which falls under the Minister for Finance's docket, is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. There are forty-six banks and non-bank financial institutions, fifteen micro finance institutions and forty-eight foreign exchange bureaus in Kenya. Thirty-five of the banks, most of which are small to medium sized, are locally owned. The industry is dominated by a few large banks most of which are foreign-owned and yet some partially locally owned. Six of the major banks are listed on the Nairobi Stock Exchange.

1.1.1 Financial Function

There are at least two ways that ICT can improve the reach and affordability of financial services. First, ICT can help traditional financial institutions to address some of the costs and

inefficiencies entailed with serving even remote rural populations. Automation and electronic payment systems have often been at the forefront of recent changes in financial service organizations. Certainly, one main effect of these changes lies in the cost reduction that has been made possible by the elimination of paper-based transactions. These transactions are personnel-intensive and therefore costly. Electronic financial services, however, are not pervasive.

As the growth of the internet broadens its scope, e-finance grows accordingly. It is a part of e-commerce, having its own unique characteristics such as convenience, price transparency, broader access to information and lower costs. Users can conduct financial transactions anywhere, anytime as long as they have a computer and a modem. Harris (2001) states that with the implication of an internet banking system, the banks maintain a direct relationship with the end users via the web and are able to provide a personal characterization to the interface, by offering additional customized services. According Griffiths and Remenyi (2003), electronic banking makes it easier for customers to compare banks' services and products. Another quality of e-finance is price transparency, which stands for the ability of all market participants to determine the available range of prices and product characteristics for financial services. If an institution is more efficient than others in price discovery, it may achieve narrower spreads that attract more customers and may gain higher profits and this efficiency can be achieved by investing in technology.

Increasing use of telecommunication and information- processing technologies in conjunction with financial services raises two areas of concern that relate to the basic soundness of the financial service industry: system security and system integrity (Haynes and Thompson, 2000). System security deals with the problem of those who would attack the system from the outside, including those who work with the system but would attempt to invoke operations they are not authorized to perform. System integrity addresses the problems that arise with recovering a system without loss of data in the event of a failure.

In view of these two effects above, it should be surprising to know that the evidence, however, shows some inconsistency in concluding the contribution of ICT to banks' profit. Some studies echo the so called Solow Paradox in concluding that ICT will actually decrease productivity. As

stated by Solow (2003), "you can see the computer age everywhere these days, except in the productivity statistics". Kozak (2005) studied 12 banks operating in the US for the period of 1989-1997 and found that although ICT has been one of the most marginal productive factors among all inputs, it cannot increase banks' profits. On the other hand, there are some studies agreeing with the positive influence of ICT spending to business value. Kozak (2005) examines the impact of the progress in ICT on the profit and cost efficiencies of the US banking sector during the period of 1992-2003. The research shows a positive correlation between the levels of implemented ICT and both profitability and cost savings.

1.1.2 Bank Operations

The three fundamental functions of commercial banking are, discount, deposits, and note issue; discount (and loan) is, in practice, but one method of creating deposits and note issue; and the three functions readily reduce themselves to one, namely, the guaranty of the credit of individuals. The guaranty is affected by a highly developed, specialized, and well-known institution, holding a liquid cash reserve, as well as quickly convertible assets, and standing ready to exchange its own credits for those of customers. The activities described (discount, deposit, and note issue) are traditionally called the fundamental functions of commercial banks. "Function" here means the course of action which peculiarly pertains to or is appropriate to the institution. The operations of discount, deposit, and issue have been shown to be reducible to a guaranty of private credit or to a substitution of bank credit for private credit. These operations are not, of course, ends in themselves, but activities toward accomplishing ends. Some recent writers on banking call these immediate activities banking "operations" and their ends, banking "functions." Although in the further analysis of causation these so-called "functions" will be but "operations" to even more remote ends, it may be well to consider the activities so distinguished as functions (Revell, 1993).

Logistics service providers adopt customer service as a strategic feature rather than a cost feature. In order to gain such a strategic feature, banks should use world-class logistics tools and processes among which information and communications technology (ICT) is one. The use of ICT has a positive relation with the overall performance of a bank (Byrd and Davidson, 2003).

However, the use of ICT requires redesign and reorganization of logistics processes (Rizzi and Zamboni, 1999).

ICT provides a supportive role for human activities to enhance organizational (or personal) efficiency and effectiveness (Cohen *et al.*, 2002). Therefore, ICT helps to execute activities faster, support autonomous decision-making processes, and enable distributive operations in order to achieve higher logistics efficiency (Faber *et al.*, 2002). In a way, the use of ICT makes the processes more transparent to the stakeholders, which in turn, could lead to adoption of better business practices to meet the customer service levels (Yazici, 2002) and increase in bank's capability to respond to a dynamic environment thereby reducing the cost of operation by as much as 50 per cent over the traditional business practices (Gattorna and Berger, 2001). However, the level of ICT application in a bank could differ significantly for other organizations, as the level of risks, constraints and expertise faced by these organizations could be quite different (Kuan and Chau, 2001). Also, when the use of ICT is not properly aligned to the required business processes, it could create disillusion on its benefits of facilitating banks' business processes (Kuan and Chau, 2001).

1.2 Statement of the problem

Financial services industry is going through intense change (in particular the retail side of the business). Financial services industries, confronted with declining customer bases due to the increased competition in the industry, have become locked into uneconomic cost structures. In addition, increased competition generates excess capacity, depresses margins and forces many financial services industry to the "marginal edge of risk taking" and may "tempt some towards failure by reducing margins and building riskier portfolios" (McConnell, 2003). The cost of banking technology, once prohibitive, is no longer a barrier to entry into the industry.

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 and communication Technology has also provided banking industry with the wherewithal to deal with the challenges the new economy poses. Information and communication technology 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 (Griffiths, 2003).

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 (Hayward, 2002). Further, ICT deployment has assumed such high levels that it is no longer possible for banks to manage their ICT implementations on a stand alone 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.

Due to the increase of competition for customers between banks and the urge to retain customers different banks have adopted several methods of ICT in order to increase effectiveness and efficiency of service delivery. There is a lot of literature on ICT and financial institutions. Kahigu (2004) did a research study on the enabling role of ICT in the business re-engineering, ac case of KCB. Musyoka (2004) did a survey of the factors influencing choice of ICT systems for core banking activities in Kenya. Kitur (2001) did a survey of the strategic role of ICT systems among insurance companies in Kenya. A survey of application of ICT for competitive advantage of firms listed at the NSE was done by Vishal (2006) and Lelei (2003) did a study of ICT as a strategic tool in microfinance institutions in Kenya.

Researchers have concentrated so much on ICT and financial institutions but there is no known study that has been done on impact of ICT on operations in commercial banks in Kenya, a knowledge gap. It is against this background that the study was motivated to fill the gap by investigating the impact of ICT on operations in Commercial Banks in Kenya. The study sought to establish the extent of application of ICT and determine its impact on financial function in commercial banks in Kenya. This study sought to answer the following three questions; What are the impacts of adopting the ICT on cost efficiency of the commercial banks in Kenya? What are the major challenges experienced by banks in the adoption and implementation of ICT? What are

the possible measures that would be applied to minimize the challenges experienced in the adoption of ICT to foster efficiency of the banks' operations?

1.3 Objectives of the Study

The objectives of the study were:

- i. To evaluate the impacts of ICT adoption on cost efficiency of commercial banks operating in Kenya
- ii. To find out the major challenges experienced by banks in the adoption and implementation of ICT.
- iii. To suggest the possible measures which can be applied to minimize the challenges experienced in adoption of ICT in order to foster efficiency of the banks' operations.

1.4 Value of the Study

This research study will be of great importance to commercial banks in Kenya since it has outlined the impact of ICT to the financial functions of the banks. The study has also established the relationship between ICT and financial function in commercial banks in Kenya.

This research study will help the government to create regulatory policies on ICT implementation in financial institutions in order to protect investors.

To researchers and academicians this study will provide more literature on the impact of ICT in the financial function. It will also provide a basis from which more studies can be done on ICT and financial institutions.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter looks at related literature on developments in use of information technology in bank operations. Empirical review and conceptual framework informed by review of the literature also fall under this chapter.

2.2 Developments in the banking industry

The developments in the banking industry are being driven by technological innovation, deregulation and changes in corporate behavior, in some cases accentuated by recent banking crises. Important aspects include privatization of state-owned banks, mergers of domestic banks and entry of foreign banks. From an IT standpoint, the banking industry is struggling to catch up with its own success. Deregulation of the financial services industry on a global scale has fueled an ongoing stampede of mergers and acquisitions and opened up many new business scenarios for banks -- from money market operations to bond underwriting to financial advisory work. To compete in new markets, and to address ever-growing consumer demand for convenient services delivery, banks have embraced new technology in both the front and back office, often through integration with legacy systems (Griffiths, 2003).

For many banks, this has resulted in massively complex IT architectures and soaring costs. Many are now striving to modernize their IT infrastructure in order to make their operations simultaneously more responsive to business drivers and more cost efficient. Banks, savings and loan associations, and credit unions concentrate on transaction processing and place less emphasis on gathering deposits and providing financing. Emphasis is placed on computer and telecommunication-based systems for delivering financial services. Included in the services offered will be data processing, securities brokerage, and, possibly, insurance. In the future, branches will be dominated by a variety of machines the consumer will use to directly interact with financial service systems (Oliner and Sichel, 2000).

Institutional personnel will serve more of an advisory role and handle customer transactions, such as payments and withdrawals, only in exceptional cases. Securities broker/ dealers, long providers of transaction services, will compete directly with banks, savings and loan associations, and credit unions in many areas. Today they already offer a variety of services such as money market funds that are designed to give the customer ease of access to financial assets (Griffiths, 2003). This trend will continue, and the future is likely to see higher levels of activity by securities broker/dealers in processing an increasingly broad variety of transactions. Retailers of food and general merchandise and possibly other types of organizations will be attracted to the financial service industry (Harris, 2001). They will see opportunities to profitably apply technological resources which are in hand or within reach to offer transaction processing services. Firms that have established information processing and telecommunication facilities are likely to be particularly active in the financial service industry. Traditional providers of financial services are likely to continue the present trend toward diversifying their offerings, often entering into areas that have been closed to them in the past.

The developments in information collection, storage, processing and transmission and distribution technology have influenced all aspects of banking activity. And was regard as the main driving forces for the changes in banking industry. Technology is influencing competition and the degree of contestability in banking. Due to the development of technology, bank's superiority in information is deteriorated. Entry barrier have been declining, new competitor have emerged. Some financial products and services have become more transparent and commodities, customer show willing to unbundled the demand for financial products and services, all these lead to a more competitive market environment. Due to lowered entry and exist and deconstruction, for some sub-financial markets, contestability in banking is also raised (Griffiths, 2003). Technology influence economy of scale: Competitive pressure force banks to lower their cost. Bank seeks to get economy of scale in bank procession instead of being a big bank. Bank seeks to secure the optimal business structure, and secure the competitive imperative of economy of scale. There are other options to get economy of scale, including joint venture and confederation of financial firms. Small firms also can get economy of scale by outsourcing, i.e. buy in economy of scale. Technology influence the economics of delivery Technology has a major impact on the way banking and financial services are delivered. A wide range of

alternative delivery mechanism becomes available, Internet, ATM reduces the dependence on the branch network as a core delivery mechanism. With the development of technology, The financial systems are substantially over-supplied with delivery system through a duplication of net work, bank has to change their delivery strategy, rationalize their branch network strategy, and widen the range of delivery option.

2.3 The extent of use of ICT

Now more than ever, banks today want to deliver better products, faster, and cheaper. At the same time, with the increase of high-technology use in networked economy, nearly all organizations have found themselves building more and more complex products. Some components of these products are built in-house and others are acquired from a third party; then all the components are integrated into one final product. The major task for these organizations is to be able to manage and control the deployed complex ICT infrastructure and components (Harris, 2001).

According to the above context, a product can be referred to as computer software, computer hardware, or a combination of software, hardware and network technologies. Because of their reliance on Information and Communication Technologies (ICT) of different variety, organizations in the banking industry have found themselves managing complex ICT infrastructures (including hardware and software, documentation, and human skills) to ensure that their core businesses are delivered by meeting the requirements of a networked economy, namely speed and quality (Treacy, 2001). Organizations have a continual quest for providing quality products. Similarities abound between the problems of manufacturing a product and producing a computer application.

By concentrating on high quality services or delivery of quality products, organizations are able to be in a better competitive advantage in the market as in the case of American companies. During the last four decades, the Japanese have successfully utilized quality tools and methodologies as part of their successful effort to become a leading nation in the manufacturing of a vast array of electronic, automotive, and other goods (Griffiths, 2003). Prior to the 1950s, Japan was not known for production of quality, but its quality has continuously improved to the

point that today many American firms are using Japanese products as a standard against which to measure theirs.

2.4 Techniques of Measuring Cost Efficiency

There are two types of efficiency: technical and allocative. Technical efficiency is based on input and output quantities and reflects the ability of a firm to obtain the maximum output from given inputs. Allocative efficiency incorporates prices as well, and reveals whether a firm is using inputs in optimal proportions given their relative prices and the production technology. Technical and allocative efficiency combined provide a measure of total or overall economic efficiency (Berger, Hunter, and Timme (1993).

2.4.1 Estimation Techniques

The analysis of efficiency assumes that the production function of the fully efficient bank is known which never the case is being practiced (Coelli, Rao, & Battese, 1998). Farrell (1957) proposed that the production function could be estimated from the sample data applying either a non-parametric (mathematical programming) or a parametric (econometric) approach. In Berger and Humphrey (1997) survey, approximately half of the organizations apply non-parametric estimation techniques while the other halves apply one of the parametric techniques.

The two most commonly used non-parametric efficiency estimation techniques are the data envelopment analysis (DEA) and the free disposable hull (FDH); the latter being a special case of DEA. DEA is a linear programming technique in which the DEA frontier is constructed as piecewise linear combinations that connect the set of best practice observations. Although non-parametric approaches have been widely applied, these techniques have some drawbacks. They focus on technological optimization rather than economic optimization, they ignore prices and they provide information on technical efficiency while ignoring allocative efficiency. Non-parametric techniques generally do not allow for random error in the data; that is, they do not consider measurement error and luck as factors affecting efficiency estimates (Berger & Mester, 1997). Thus, any deviation from the frontier is assumed to reflect inefficiency. If measurement errors are present, they would be reflected in a change of measured efficiency, and as pointed out by Berger and Humphrey (1997), any of these errors in one of the banks on the efficient frontier

may change the measured efficiency of all banks. On the other hand, DEA does not require an explicit specification of the functional form of the underlying production function, and it therefore imposes less structure on the frontier.

2.4.2 Functional Forms

The analysis of bank efficiency based on one of the parametric techniques requires a selection of an appropriate functional form for the cost function. Ideally, a functional form should be sufficiently flexible to accommodate different production structures, and should permit the imposition of constraints or properties consistent with the assumed optimising behaviour (Coelli et al., 1998). The Cobb–Douglas form is a simple functional form and is easy to estimate. However, it imposes restrictive properties such as constant returns to scale. The transcendental logarithmic functional form, for short the translog functional form, belongs to the group of flexible forms. It is less restrictive than the Cobb–Douglas form, but is mathematically more demanding and leads to potential problems with multicollinearity and degrees of freedom. It is linear in parameters and a good second-order Taylor approximation of a general cost (production) function. The Fourier-flexible form is more flexible than the translog form and it is a global approximation to many cost and profit functions. The specification of the Fourier-flexible form is, however, more complex. Some authors suggest that applying a single translog function to a sample of banks varying substantially in size and product mix might create a specification bias (Yildirim & Philippatos, 2002). However, Berger and Mester (1997) report that the use of the Fourier-flexible form does not produce results significantly different from those obtained using a translog form.

2.5 ICT in the banking industry

2.5.1 System Security and Integrity

Security has long been an area of concern to providers and users of financial services. Traditionally, banks have been characterized by large metal doors and imposing vaults with massive and complex locking mechanisms. Financial service providers stress the safety of assets in attracting customers, and customer trust is a keystone of the financial service industry.

Increasing use of telecommunication and information- processing technologies in conjunction with financial services raises two areas of concern that relate to the basic soundness of the financial service industry: system security and system integrity (Haynes and Thompson, 2000). System security deals with the problem of those who would attack the system from the outside, including those who work with the system but would attempt to invoke operations they are not authorized to perform. System integrity addresses the problems that arise with recovering a system without loss of data in the event of a failure.

2.5.2 Data base management systems

Data base management systems constitute a specialized software technology of particular importance to providers and users of financial services. This software facilitates the tasks of organizing and accessing large quantities of data where relationships between the various elements comprising a data base are complex and where diverse communities of users access various subsets of the data base. By permitting the sharing of data throughout an organization, the costs of data collection, maintenance, and dissemination are controlled, and all users are able to base their decisions on a common body of information (Treacy, 2001).

Data base technology insulates data bases from the application programs that access them and can significantly improve system integrity and security. Depending on the data base system, users can be limited to accessing only specific data elements, and further, the operations permitted them can be controlled by the data base administrator (Harris, 2001). Audit trails that record the identity of all who access data and the operations performed can be generated.

For example, some users may be permitted only to retrieve data, while others may both retrieve and change a specific set of data elements. Permission to add new elements to a data base can be denied both of these groups and given, instead, to other units within the organization.

On the other hand, data base management systems “put all of the eggs in one basket” in that much of the data critical to an organization is concentrated in only a few data bases. Compromise of a data base management system can lead to significant damage to the organization that is affected (Griffiths, 2003).

In such an environment, the organization can become vulnerable if management does not fully use those data base management system features which are designed to ensure system security and integrity. Although there is no such thing as perfect security for any system, data base management technology can allow a higher degree of system security and integrity than possible when collections of individual files are used by each application system (Griffiths, 2003).

2.5.3 Electronic Funds Transfer

Automation and electronic payment systems have often been at the forefront of recent changes in financial service organizations. Certainly one main effect of these changes lies in the cost reductions that has been made possible by the elimination of paper-based transactions, which are personnel-intensive and therefore costly. Electronic financial services, however, are not pervasive. While the deployment of ATMs, for example, appears to be prevalent in major cities, smaller towns and remote areas of the country still rely on traditional systems for delivering financial services, although this picture is rapidly changing. While individuals depend on traditional services, many of the financial service providers rely on automation for the ease and efficiency of operating the services (Griffiths, 2003). Network systems continue to expand because communication and information technologies enable a broader geographic base to be served and allow increased transaction volume without a proportional increase in costs.

2.5.4 Automated Teller Machines

The first applications of automation in customer services were very simple cash dispensers that provided the user with a fixed sum of cash in a single denomination. These systems generally operated off-line, so the transaction was not a direct debit (Roach, 2004). Now ATM systems offer most of the same transaction capabilities as a branch bank, allowing consumers to withdraw cash from a bank account, make deposits, borrow cash against a line of credit, obtain a cash advance on a credit card, pay bills, transfer funds from one account to another, and inquire about account balances.

Credit can be obtained either by granting of overdraft limits or, in some cases, through using a credit card rather than a debit card to activate the machine to obtain a cash advance. Systems

vary, however; some are merely cash dispensers, although the technology of the different systems is basically the same (Griffiths & Remenyi, 2003).

The plastic card's magnetic stripe is the "key" that unlocks the machine for use. The way the data are encoded and what items of information are placed on the magnetic stripe vary. A great deal of attention has been paid to the standards being developed for the plastic card.

Although the cost of ATMs has fallen significantly since their introduction, "the cost of ATMs is unlikely to fall as rapidly as that of many other parts of an electronic funds transfer system because of the various mechanical parts that are necessary (Eisenhardt & Martin, 2000). The capacity to process transactions and information will become much cheaper as intelligent terminals are developed, with display screens and keyboards being largely electronic. There are many mechanical parts in the dispensing of cash, in the printer, and in the mechanisms for accepting funds. A further result of the mechanical nature of cash dispensing is the shorter life of currency because it quickly becomes unsuitable for use in cash dispensers'

2.6 ICT in Kenya Commercial Banks

Since the 1980s the business environment has changed dramatically. Information and communications technology has revolutionized business organizations bringing forth new ways of doing business that are innovative, efficient and more effective. Organizations' today confront new markets, new competition and increasing customer expectations hence the need to efficiently manage the information about competitors, their products, market trends, customer demands and technological developments (Laudon, 2000).

Through the emergence of fast and powerful computers, networks and infrastructure, delivery of immediate and relevant information enables policy-makers in an organization to make quick and accurate decisions (Newmann, 1994). Laudon (2003) while commenting on the role of information systems in organisations indicates that ICTs provide tools for data collection, analysis, storage and dissemination to support decision making in organization.

In March 2006, Kenya published its first Information and Communications Policy (KIC, 2006). The policy articulated the opportunities that Kenya had identified in the use of Information and Communications Technology (ICT) for social and economic development. In fact the vision

statement of the policy was “to create an information society”. There are many other countries that aim to leverage ICT for economic development. For example, President Paul Kagame of the Republic of Rwanda has been a champion in the use of ICT for economic development. Other African countries that have developed policies and strategies for effective use of ICT for economic development include Morocco, Egypt, Mauritius and South Africa. India is not only a user of ICT to provide business processing outsourcing (BPO) services to companies in developed countries, but is also one of the leaders in the software industry. Kenya has identified Business Process Outsourcing (BPO) as one of the strategic uses of ICT to support economic development. ICT by nature of technology is always changing. Kenya has finally opened up to global trends.

The efficiency brought about in banks and other organizations can be realized in areas of easy access to customers and staff records, data on assets of the organization as well as efficiency in front office operations and management of key processes like registering new customers’ bank accounts and other finance transactions (Tusubira & Mulira, 2005). Technology- hardware, software, telecommunications and related technologies are now fairly priced and therefore more affordable to many banks. Wanyembi (2002), in his doctoral thesis entitled *improving ICT management in public universities in Kenya* points out that the strong interest in the adoption of ICT emerged in sub-Saharan Africa for three reasons: one, the revolution in ICT that has resulted in computer systems- hardware and software- becoming cheaper, and therefore, more widely affordable. Two, the substantial value added utility of ICT in the provision of, and access to, information services for improved planning and organizational management becoming more widely recognized.

Alter (2001) notes that banks invest in information systems because they believe the systems will make a difference in the way the organization conducts its business- processes and functions, basically giving the bank a competitive advantage. Competition among various banks is the main force behind strategic moves that each bank takes. Banks are not spared from competition and therefore need to make strategic moves, especially taking advantage of information technology.

Munguti (2001) points out that the changes in the business environment have made a demand on enterprises to be competitive in their supply chain; shorten throughput time; reduce stock to a

minimum; improve product quality; provide more reliable delivery date and good service to customers; and to efficiently co-ordinate global demand, supply, and production in an effort to be competitive. For Wanjohi (2006) information systems bring about faster and better decision making given the unlimited access to high quality and well maintained information resources. He adds that competitiveness can also be seen in the return on investment (ROI). ROI though hard to quantify for many institutions could be seen from the cost savings in paperwork, loss of important documents always on transit in manual process, and the increased staff morale. Systems get the organization to a level of elegance and pride, which can be seen, for example, through online access to records such as customer's bank transactions, online money transfers and also e-banking services.

2.7 Empirical Review

Today's business environment is very dynamic and undergoes rapid changes as a result of technological innovation, increased awareness and demands from customers.

Business organizations, especially the banking industry of the 21st century operates in a complex and competitive environment characterized by these changing conditions and highly unpredictable economic climate. Information and Communication Technology (ICT) is at the centre of this global change curve. Griffiths and Remenyi, (2003) contend that managers cannot ignore Information Systems because they play a critical role in contemporary organization. They point out that the entire cash flow of most fortune 500 companies is linked to Information System.

The application of information and communication technology concepts, techniques, policies and implementation strategies to banking services has become a subject of fundamental importance and concerns to all banks and indeed a prerequisite for local and global competitiveness. ICT directly affects how managers decide, how they plan and what products and services are offered in the banking industry. It has continued to change the way banks and their corporate relationships are organized worldwide and the variety of innovative devices available to enhance the speed and quality of service delivery.

Haynes and Thompson (2000) contend that financial service providers should modify their traditional operating practices to remain viable in 2000 and the decades that follow. They claim that the most significant shortcoming in the banking industry today is a wide spread failure on the part of senior management in banks to grasp the importance of technology and incorporate it into their strategic plans accordingly. Woherem (2000) claimed that only banks that overhaul the whole of their payment and delivery systems and apply ICT to their operations are likely to survive and prosper in the new millennium. He advises banks to re-examine their service and delivery systems in order to properly position them within the framework of the dictates of the dynamism of information and communication technology. The banking industry in Kenya has witnessed tremendous changes linked with the developments in ICT over the years.

The quest for survival, global relevance, maintenance of existing market share and sustainable development has made exploitation of the many advantages of ICT through the use of automated devices imperative in the industry. This study evaluates the response of Nigerian banks to this new trend and examines the extent to which they have adopted innovative technologies in their operations and the resultant effects.

Oliner and Sichel conclude that Information communication and Technology contribute significantly to firm level output. In fact, they find that I.C.T. capital contributes an 81% marginal increase in output, whereas non-IT capital contributes 6%. Similarly they show that IS-labor is more than twice as productive as non-IS labor.

Milne (2006), on the other hand, concludes that there is significant benefit from investment in Information Communication and Technology especially in the Banking Industry. Mario Castelino (2006) suggests that Indian banking industry has provided the leading edge to what is happening to the Indian economy. Banks have equipped themselves with the latest of technology--core Banking. Business Process Reengineering has been introduced to enhance spleen and efficiency of delivery.

According to Berger (2003), globalization in banking is based on four important pillars; trade in goods and services; flow of capital and movement of human beings across boundaries;

harmonization of regulatory framework in different countries; and developments in technology, particularly those in information technology.

Mckinesey and Patrick (2003) concluded that additional ICT investments contributed negatively to productivity, arguing that "estimated marginal benefits of investment in ICT are less than the estimated marginal costs.

2.8 Information Technology on Securities Instruments

Securities instruments are designed to satisfy both the goals of investors and the need of corporations and organizations to gather capital to finance industrial research and development and resulting expansion or diversification (Harris, 2001).

Securities instruments are of interest in discussions of the effect of information technology on the financial service industry for several reasons. First, the direct impact of technology on the securities industry, from the point of view of the consumer, may be most strongly felt in the way in which the characteristics of investment instruments are changed (Harris, 2001).

Second, the intrinsic characteristics of securities instruments may affect the way in which they evolve in a technology-intensive environment (Harris, 2001). As information technology changes the way in which the securities industry operates, the relative importance of various investment instruments may be affected by information technology.

Third, interest in instruments that are now on the market may be predictive of which investment products may best meet future demands of consumers in terms of liquidity, level of risk, and return. This type of activity has already been seen in the financial service market in the development of money market mutual funds, which were patterned after the idea of mutual funds and met the consumer demand for more liquidity. The development and trading of securities instruments is largely dependent on the application of information technology. Such technology has also had a major impact on the calculation and payment of return and the recording of ownership (IBM, 2003). The rate of growth seen in options and many types of futures contracts would not have been possible without communications and computer technologies. As securities

markets become more technology- based, it must be expected that investment instruments will also.

However, it is unlikely that technology will be the sole cause of the development of any new securities product, although it may change the characteristics of some investment products or expand their application to such an extent that they are different in function and operations. As a result of these changes, both investors and their advisors will have to examine their methods of evaluating potential investments. The characteristics of investment instruments may be expected to change in four ways because of the application of information technology: liquidity of instruments, the packaging of securities products, the way in which potential investments are analyzed, and the importance of speculative markets (IBM, 2003).

The liquidity of an investment instrument is determined both by the contractual term of the instrument and the speed with which the investor can trade or redeem the instrument. New communications technologies, notably interactive cable and the adoption of personal computers with networking capabilities, have been applied to allow investors greater access to securities markets. For example, systems available to individual investors provide updated information continually on price and significant activities involving securities in which the investor is interested (McConnell, 2003). Easier access to this information changes the way investments are analyzed by making it easier for the investor to make decisions on his portfolio in a short time frame.

Securities products are being packaged, often with products from other financial service industries, to fill a wider range of investors' financial needs. This trend is likely to continue as the number of investment options increases and the demands of users become increasingly more complex. Much of the new product development that will be seen in securities markets may result from the increasing role of speculative markets. The ability of investors to use speculative markets is increased by the application of information technology (Haynes and Thompson, 2000).

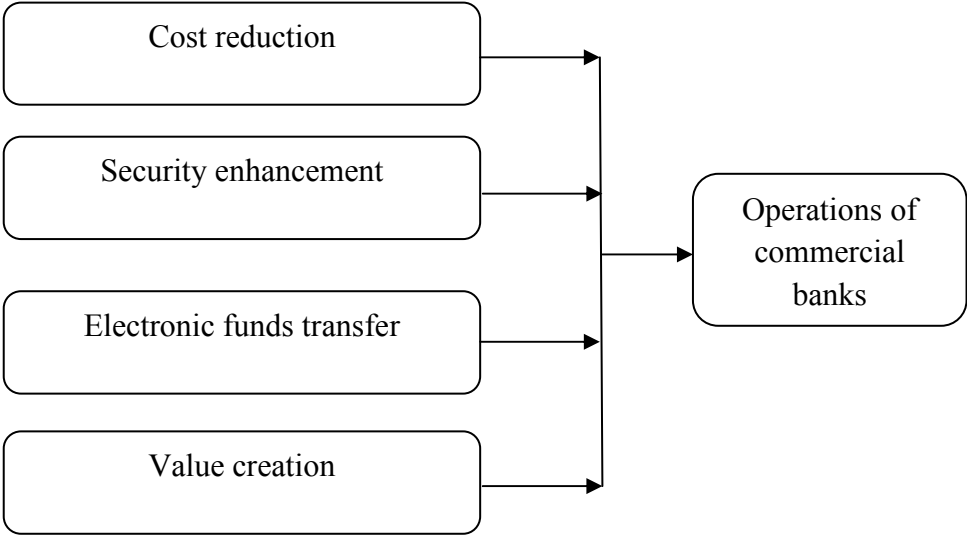
2.9 ICT and Bank's Financial Performance

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 (Treacy, 2001). The evidence however suggests that the network effect is relatively high in the US banking industry, implying that although banks use ICT to improve competitive advantage, the net effect is not as positive as normally expected. In a broader context, the innovation in information and communication technology, deregulation and globalization in the banking industry could reduce the income streams of banks, and thus the strategic responses of the banks, particularly the trend towards mega-mergers and internal cost cutting, are likely to change the dynamics of the banking industry (Haynes and Thompson, 2000). Given our negative result due to possible network effect, the changing banking environment could still make it insufficient to offset any reduction in income.

2.10 Conceptual Framework

The financial function of financial service provider is the dependant variable depending on cost reduction, security enhancement, electronics funds transfer and value creation provided by the implementation of the use of information, communication and technology.

Figure 2. 1: Conceptual framework



Independent variable

Dependent variable

Source: Author (2010)

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out various stages and phases that were followed in completing the study. It involves a blueprint for the collection, measurement and analysis of data. Specifically the following subsections were included; research design, target population, sampling design, data collection instruments and procedures, and data analysis.

3.2 Research Design

This research problem could have best been studied through the use of a descriptive research design. Descriptive research is the investigation in which quantitative data is collected and analyzed in order to describe the specific phenomenon in its current trends, current events and linkages between different factors at the current time. Descriptive research design was chosen because it enables the researcher to generalize the findings to a larger population. The descriptive research design approach has been credited due to the fact that it allows analysis the relations of variables.

3.3 Target Population

The population of the study consisted of all commercial banks in Nairobi. There are 45 commercial banks in Kenya. The target population of this study was therefore all the 45 commercial banks in Kenya.

3.4 Sample Technique and Sample Size

Purposive sampling was used to select operations manager in this study. In this sampling method the researcher used her personal judgment to select those respondents that best suit the purposes of the study or only those believed to have the information sought. The researcher believed that operations managers had the necessary information on impact of ICT on the financial function in

banks. A sample is a small group of subjects or participants selected procedurally from the target population. The sample size of this study was 45 respondents.

3.5 Data Collection

The researcher used primary data for this research study. Primary data was obtained through self-administered questionnaires with closed and open-ended questions. The questionnaires included structured and unstructured questions and were administered through drop and pick method to respondents who were operation managers in the banks. The closed ended questions enabled the researcher to collect quantitative data while open-ended questions enabled the researcher to collect qualitative data (Appendix 1).

3.6 Data Analysis

The collected data was thoroughly examined and checked for completeness and comprehensibility. The data was then be summarized, coded and tabulated. Descriptive statistics such as means, standard deviation and frequency distribution were used to analyze the data. Data was coded and entered into the Statistical Package for Social Sciences (SPSS) for analysis. SPSS was used to perform the analysis as it aids in organizing and summarizing the data by the use of descriptive statistics such as tables. Data presentation was done by the use of pie charts, bar charts and graphs, percentages and frequency tables. This ensured that the gathered information is clearly understood.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents data analysis, results and discussion of the study findings. The objectives of this study were to evaluate the impacts of ICT adoption on cost efficiency of commercial banks operating in Kenya, to find out the major challenges experienced by banks in the adoption and implementation of ICT, and to suggest the possible measures which can be applied to minimize the challenges experienced in adoption of ICT in order to foster efficiency of the banks' operations.

4.2 Response Rate

The researcher targeted operation managers from 45 commercial banks in Nairobi. Of the targeted respondents, 33 responded to the questionnaire. This represents 73.3% response rate which is above the recommended 50%.

4.3 General Information

The researcher wanted to know for how long the respondents have worked in their respective banks. A majority of the respondents indicated that they have worked for 1-5 years at 60.6% as compared to 30.3% who indicated that they have worked for less than one year. Only 9.1% said they have worked for above 10 years. These results are presented in table 4.1 below.

Table 4. 1: Worked in the bank

	Frequency	Percent	Cumulative Percent
Less than a year	10	30.3	30.3
1-5	20	60.6	90.9
Above 10 years	3	9.1	100.0
Total	33	100.0	

The respondents were asked to indicate their highest level of education. A majority of the respondents 75% were graduates as compared to 12.5% who were diploma holders and masters degree each. These findings are presented in table 4.2 below.

Table 4. 2: Level of education

	Frequency	Percent	Cumulative Percent
Diploma	4	12.5	12.5
Graduate	24	75.0	87.5
Masters	4	12.5	100.0
Total	32	100.0	

4.4 Level Banks embarked on ICT

The researcher further wanted to know the extent to which banks have embarked on information communication, and technology (ICT). Majority of the respondents said their banks have embarked on ICT to a very great extent at 68.8% as compared to 25% who said great extent. Only 6.3% indicated moderate extent. These results are presented in the table 4.3 below.

Table 4. 3: Bank embarked on ICT

	Frequency	Percent	Cumulative Percent
Moderate extent	2	6.3	6.3
Great extent	8	25.0	31.3
Very great extent	22	68.8	100.0
Total	32	100.0	

4.5 Emphasis on aspects of ICT

The researcher wanted to know the emphasis placed on a number of aspects of ICT. The respondents rated to greater extent database management systems with a mean score of 4.78, automated teller machines with a mean score of 4.75, bank embarking on ICT with a mean score of 4.62, and bank emphasizing on system security and integrity with a mean score of 4.28. Only electronics funds transfer was rated moderately with a mean score of 3.94. These results are presented in table 4.4 below.

Table 4. 4: Emphasis on aspects of ICT

	N	Mean
Database management systems	32	4.78
Automated teller machines	32	4.75
Bank embarked on ICT	32	4.62
Bank emphasized on system security and integrity	32	4.28
Electronics funds transfer	33	3.94
Valid N (listwise)	29	

4.6 Factors influencing ICT use in Banks

In an effort to establish the factors that influence the extent of ICT use in banks, the researcher asked the respondents to rate value creation, changing banking environment, and competition from other banks. Value creation and changing banking environment were rated extent with a mean score of 4.67 and 4.13 respectively. Competition from other banks was rated moderately with a mean score of 3.24. These findings are presented in table 4.5 below.

Table 4. 5: Factors influencing ICT use in Banks

	N	Mean
Value creation	33	4.67
Changing banking environment	32	4.13
Competition from other banks	33	3.24
Valid N (listwise)	32	

4.7 Effects of ICT on Banks functions

The researcher wanted to know the effects of ICT in banks services. The respondents rated service delivery to a great extent with a mean score of 4.33 followed closely by a reduction of

congestion in the banking halls with a mean score of 4.23. Service quality was rated moderately with a mean score of 3.79. These findings are presented in table 4.6 below.

Table 4. 6: Effects of ICT on Banks functions

	N	Mean
Services delivery	33	4.33
Reduction of congestion in the banking halls	30	4.23
Service quality	33	3.79
Valid N (listwise)	30	

4.8 ICT Contribution to financial services provision

The respondents were asked to rate how ICT contributed to a number of aspects of financial services provision. Convenience was rated to a greater extent with a mean score of 4.66. Efficiency in service delivery and improvement in service quality were rated moderately with a mean score of 3.97 and 3.27 respectively. Confidentiality was rated to a little extent with a mean score of 2.94. These findings are presented in table 4.7 below.

Table 4. 7: ICT Contribution to financial services provision

	N	Mean
Convenience	32	4.66
Efficiency in services delivery	33	3.97
Improvement in service quality	33	3.27
Confidentiality	31	2.94
Valid N (listwise)	30	

As competition for customers and retention of customer's increases, banks are investing heavily on information, communication and technology. In light of this, respondents were asked to rate their level of agreement with a number of statements about the impact of ICT on financial functions in their bank. The respondents affirmed that ICT enables the balancing of efficiency and innovation with a mean score of 4.94. Respondents also said that ICT is used by financial services providers for value creation rating it with a mean score of 4.77. The statement that ICT

leads to cost reduction in financial service providers was rated to a greater extent with a mean score of 4.67. These results are presented in table 4.8 below.

Table 4. 8: Impact of ICT on financial functions

	N	Mean
ICT enables the balancing of efficiency and innovation	33	4.94
ICT is used by financial services providers for value creation	31	4.77
ICT leads to cost reduction in financial service providers	33	4.67
ICT is used for security enhancement in financial services providers	32	3.97
Valid N (listwise)	30	

4.10 Impact of ICT on financial functions

The relationship between IT expenditures and bank’s financial performance or market share is conditional upon the extent of network effect. Respondents were asked to rate the extent they agreed with this assertion. Majority of the respondents (71%) strongly agreed compared to 29% who said they merely agree. These findings are presented in table 4.9 below.

Table 4. 9: IT expenditures and bank's financial performance

	Frequency	Percent	Cumulative Percent
Agree	9	29.0	29.0
Strongly agree	22	71.0	100.0
Total	31	100.0	

If the network effect is too low, IT expenditures are likely to reduce payroll expenses, increase market share, and increase revenue and profit. Respondents were asked to indicate their agreement or disagreement with this statement. Majority of the respondents (71%) said they agree compared to 19.4% who said they indicated neutral. Those who disagreed were 6.5% while only 3.2% indicated strongly agree. These results are presented in table 4.10 below.

Table 4. 10: IT expenditures, payroll expenses, increase market share, increase revenue and profit

	Frequency	Percent	Cumulative Percent
Disagree	2	6.5	6.5
Neutral	6	19.4	25.8
Agree	22	71.0	96.8
Strongly agree	1	3.2	100.0
Total	31	100.0	

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study. The study sought to evaluate the impacts of ICT adoption on cost efficiency of commercial banks, find out the major challenges experienced by banks in the adoption and implementation of ICT, and suggest the possible measures which can be applied to minimize the challenges experienced in adoption of ICT in order to foster efficiency of the banks' operations.

5.2 Summary of the Study

This study started with a chapter on introduction. This chapter set out the lay out on which the study was done. It comprised of the background of the study, statement of the problem, objectives of the study, and value of the study. The second chapter reviewed related literature. This looked at the developments in the banking industry, extent of ICT use, ICT in Kenya Commercial Banks, and ICT and Bank's Financial Performance. The third chapter outlines the methods used to achieve the set objectives. It describes the research design, population and data collection methods and analysis. The fourth chapter presents the data analysis results and discussion. Finally, the fifth chapter presents the summary of the study, conclusions and recommendations.

5.3 Conclusions

Based on the study findings banks have embarked on ICT to a very great extent. Database management systems, automated teller machines, system security and integrity have been emphasized in ICT adoption by banks. This is perhaps due to the sensitivity and risks associated with these areas. Value creation and changing banking environment are the factors behind increased ICT adoption in banks. Competition from other banks was found to moderately influence ICT adoption. This could mean that ICT in banks is viewed as a basic necessity and perhaps its how ICT is used that make the difference.

ICT was found to be critical in service delivery and reducing congestion in banking halls. On contribution of ICT to financial services, convenience, efficiency in service delivery and improvement in service quality were found to be critical. All these efforts are directed towards improvement of customer service and confirm that competition for customers and retention of existing customer is intense among the commercial banks. IT expenditures and bank's financial performance or market share is conditional upon the extent of network effect. If the network effect is too low, IT expenditures are likely to reduce payroll expenses, increase market share, and increase revenue and profit.

5.4 Recommendations

This study recommends that further study be carried out to establish why there seem to be reluctance in adoption of ICT for electronic funds transfer. Equally, banks should device means of using ICT in improving service quality. In an environment where competition for customers and retention of existing customers is high, banks should exploit every possible opportunity to differentiate their services and products. ICT provide this opportunity and banks should employ innovative ways to make their customer experience better and attract new customers.

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Appendix I: Questionnaire

SECTION 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 level []

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?

ICT methods	1	2	3	4	5
System security and integrity					
Database management systems					
Electronic funds transfer					
Automated teller machines					

3. To what extent have the following factors influenced the extent use of ICT in your bank?

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

4. Rate the extent to which ICT affects the service delivery in the bank?

Statement	1	2	3	4	5
Services delivery					

Service quality					
Reduction of congestion in the banking halls					

5. 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

Statement	1	2	3	4	5
Efficiency in services delivery					
Improvement in service quality					
Confidentiality					
Convenience					

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

1. As competition for customers and retention of customer's increases, banks are investing heavily on information, communication and technology. In light of this statement, rate your level of agreement to the following statements about the impact of ICT on financial function in your bank. Use a scale of 1 to 5 where 1 is strongly agree and 5 is strongly disagree.

Statement	1	2	3	4	5
ICT leads to cost reduction in financial service providers					
ICT enables the balancing of efficiency and innovation					
ICT is used by financial services providers for value creation					
ICT is used for security enhancement in financial services providers					

2. The relationship between IT expenditures 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 []

3. If the network effect is too low, IT expenditures are likely to reduce payroll expenses, increase market share, and increase revenue and profit. 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 []

Appendix II: List of commercial banks in Kenya

1. Abn Amro Bank, Nairobi
2. African Banking Corporation, Nairobi
3. African Development Bank, Nairobi
4. Akiba Bank, Nairobi
5. Bank of Baroda, Nairobi
6. Bank of India, Nairobi
7. Bank of Oman, Nairobi
8. Bank of Tokyo, Nairobi
9. Bankers Trust, Nairobi
10. Banki Kuu Ya Kenya, Nairobi
11. Banque Indosuez, Nairobi
12. Barclays Bank of Kenya, Nairobi
13. Biashara Bank of Kenya, Nairobi
14. CFC Bank, Nairobi
15. Citybank, Nairobi
16. City Finance Bank, Nairobi
17. Commercial Bank of Africa, Nairobi
18. Continental Bank of Kenya, Nairobi
19. Cooperative Bank of Kenya, Nairobi

20. Delphis Bank, Nairobi
21. Development Bank, Nairobi
22. Diamond Trust Bank, Nairobi
23. East African Development Bank, Nairobi
24. Euro Bank, Nairobi
25. First American Bank of Kenya, Nairobi
26. Habib Bank, Nairobi
27. Industrial Development Bank, Nairobi
28. Kenya Commercial Bank, Nairobi
29. Kenya Post Office Savings Bank, Nairobi
30. Kestrel Capital East Africa, Nairobi
31. Korea Exchange Bank, Nairobi
32. K-Rep Bank, Nairobi (*Microfinance*)
33. Mashreqbank, Nairobi
34. Middle East Bank, Nairobi
35. National Bank of Kenya, Nairobi
36. Panafrican Bank, Nairobi
37. Prudential Bank, Nairobi
38. Riverbank Estate, Nairobi
39. Stanbic Bank, Nairobi
40. Standard Chartered Bank , Nairobi

41. Trade Bank, Nairobi
42. Trust Bank, Nairobi
43. Victoria Commercial Bank, Nairobi
44. Eco bank
45. Equity bank limited

Source: (CBK, 2009)

Appendix III: Time Plan

2010						
Month /Activity	May	June	July	Aug	Sep	Oct
Project Proposal Writing						
Corrections						
Data Collection						
Data Analysis						
Report Writing						
Submission of Report						
Finalization of Report						

Appendix IV: The Budget Schedule

ITEM	COST (kshs)
1 Proposal Development	
a) Binding 6 copies @ Kshs. 50	300.00/-
b) Traveling Expenses	4,000.00/-
2 Data collection	
a. Data collection	3,000.00/-
b. Data analysis and computer runtime	5,000.00/-
c. Printing 70 pages @ Kshs. 30	2,100.00/-
3 Others	
a. Miscellaneous expenses	4,200.00/-
GRAND TOTAL	18, 600.00/-