

**FACTORS INFLUENCING ADOPTION OF INFORMATION COMMUNICATION
TECHNOLOGY BANKING IN COMMERCIAL BANKS IN KENYA: A CASE STUDY
OF KENYA COMMERCIAL BANK, KENCOM HOUSE BRANCH, NAIROBI
COUNTY, KENYA**

BY

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**A RESEARCH REPORT SUBMITTED IN FULFILMENT FOR THE REQUIREMENTS
FOR MASTER OF ARTS DEGREE IN PROJECT PLANNING AND MANAGEMENT,
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2011

DECLARATION

This research report, which is my original work, has not been presented for a degree in any other University.

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ACT DEDICATION

This research is dedicated to my beautiful daughters Tamara Chelagat and Tasha Cheronno for their inspiration, support, encouragement and understanding throughout the research period. I wouldn't have made it this far without them. Both my daughters are below seven and as young as they are they made it possible for me to reach this far.

I also dedicate this research to my Father and Late Mother who passed away while I was pursuing this course. Both my parents have been supportive and encouraging. They both value education as the key to success. My siblings Diana, Rhoda, Suzanne and Jimmy have been my cheerers. I am humbled by their support.

Special mention goes to Mr. Rogoche Chirak, my resident lecturer, who approached the subject as pioneers of Embu class. Without his dedication and marketing skills, I may not have come this far in my education. Probably without his marketing skills the University of Nairobi would not have considered having a course of Embu. I am sincerely grateful to him since my dreams of pursuing further studies came true.

I humbly thank God for giving me my life. Without his amazing grace I would not have been able to clear my proposal. I cannot fail to recognize that He is my strength and power and the giver of life to all human beings.

I would wish to thank the Kenya Commercial Bank fraternity for enabling me to pursue this course without a hitch. Their support on my research cannot be underestimated considering my topic was a case study of Kenya Commercial Bank. The staff members that were my respondents in this research report were amazingly supportive and I wish to thank each one of them immensely. I shall remain forever grateful to them.

Kenya Commercial Bank highly supports pursuance of education and recognizes that its personnel have to be highly qualified both in experience and education. The financial support comes from my employer that I would not have done this course without them. To my employer, I am very thankful for this great gesture.

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I hereby wish to express my sincere gratitude to my supervisor, Dr. Christopher Gakuu for guidance, selfless dedication and encouragement in making this research report a reality. I am forever grateful that he could find time to see me through this research report despite his busy schedule.

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Lastly, I would wish to recognize all those I have not mentioned but have assisted me in various ways along the way to enable me pursue this course. I am thankful.

Information and communication technology in commercial banks in Kenya. The study was aimed at finding out the extent to which commercial banks are adopting ICT banking. It was also aimed at determining if the adoption of Information ICT banking will improve institutional performance and service delivery to the clients. Previous IT initiatives did not give expected results. The bank had adopted a strategy of offering its services through a decentralized system and relies heavily on Business Development Officers to recruit, issue, lead and manage money loaned to clients there is a heavy reliance on manual process in the field and banking processes. The study was descriptive and limited to Kenya Commercial banks in Kenya. The population included the entire staff of Kenya Commercial Bank and a census was taken for purposes of the study. Questionnaires were the main mode of data collection due to the geographical disparity of the staff at the institution. The study utilized a questionnaire set out in a Likert scale to get responses from a census of Kenya Commercial Bank. The data was analyzed and the study was expected to find that adoption of ICT banking improved service delivery and institutional performance. The study found out that the adoption of ICT had a major impact on service delivery and institutional performance of banks. The study concluded that ICT banking adoption had an impact on operational efficiency, cost reduction, customer service and competitiveness of the organization. As a way of recommendation, banks need to invest in relevant technologies after thorough and careful assessment of their requirements. Further research is necessary as the findings were based on a relatively 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 other banks. There is a need for further research to be conducted on existing ICT banking services for example biometric Self Teller Machines, banking point of sale service points. This will be aiming at reducing the complexity associated with ICT banking.

ABSTRACT

The study was aimed at establishing the factors that influence adoption of Information and communication technology in commercial banks in Kenya. The study was aimed at finding out the extent to which commercial banks are adopting ICT banking. It was also aimed at determining if the adoption of Information ICT banking will improve institutional performance and service delivery to the clients. Previous IT initiatives did not give expected results. The bank had adopted a strategy of offering its services through a decentralized system and relies heavily on Business Development Officers to recruit, train, lend and recover money loaned to clients there is a heavy reliance on manual process in the field and banking processes. The study was descriptive and limited to Kenya Commercial banks in Kenya. The population included the entire staff of Kenya Commercial Bank and a census was taken for purposes of the study. Questionnaires were the main mode of data collection due to the geographical disparity of the staff at the institution. The study utilized a questionnaire set out in a likert scale to get responses from a census of Kenya Commercial Bank. The data was analysed and the study was expected to find that adoption of ICT banking improved service delivery and institutional performance. The study found out that the adoption of ICT had a major impact on service delivery and institutional performance of banks. The study concluded that ICT banking adoption had an impact on operational efficiency, cost reduction, customer service and competitiveness of the organization. As a way of recommendation, banks need to invest in relevant technologies after thorough and careful assessment of their requirements. Further research is necessary as the findings were based on a relatively 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 other banks. There is a need for further research to be conducted on existing ICT banking services for example biometric Auto Teller Machines's, banking point of sale service points . This will be aiming at reducing the complexity associated with ICT banking.

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ABBREVIATIONS LIST OF FIGURES

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B2C – Business to Customer

CBK – Central Bank of Kenya

CKB – Commercial Bank of Kenya

DOI – Diffusion of Innovation

FX – Foreign Exchange

GDP – Gross Domestic Product

ICT – Information Communication Technology

IT – Information Technology

KBA – Kenya Bankers Association

KCB – Kenya Commercial Bank

KEPSA – Kenya electronic Payments and Settlements Systems

KEPTC – Kenya Posts and Telecommunication Corporation

MSC – Multimedia Super Corridor

ROA – Return on Assets

ROE – Return on Equity

RTGS – Real Time Gross Settlement

SME – Small and Medium Enterprises

T24 – Temenos 24

ABBREVIATIONS AND ACRONYMS

B2B – Business to Business

B2C – Business to Customer

CBK – Central Bank of Kenya

CBK- Commercial Bank of Kenya

DOI – Diffusion of Innovation

FX – Foreign Exchange

GDP – Gross Domestic Progress

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IT – Information Technology

KBA – Kenya Bankers Association

KCB – Kenya Commercial Bank

KEPSS – Kenya electronic Payments and Settlements Systems

KP&TC – Kenya Posts and Telecommunication Corporation

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RTGS – Real Time Gross Settlement

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CHAPTER ONE

INTRODUCTION

1.1 Background Information

The end of the second world war marked the beginning of a post-industrial society (Bell, 1973) most commonly referred to as the Information Age (Gaines, 1987). This is represented by two forms of technology; Communication Technology (CT) and Information Technology (IT). In general terms, communication technology consists of "the hardware equipment, organisational structures and social values by which individuals collect, process, and exchange information with other individuals" (Rogers, 1986, p.2). In contrast, IT refers to computer and electronics-based technology, generally encompassing the development, installation, and implementation of computer systems and applications (Lexico, 2003). When the two forms of technology converged they created a new form of technology known as Information Communication Technology (ICT).

Rapid cycles of technological innovation (Johnson et al, 1999), particularly with the advent of e-commerce, have seen ICT become recognised by small business owner/managers as a vital element of business. Perhaps most significantly, the internet is praised as "a unique and powerful form of ICT" which despite the collapse of the "dot-coms" is continuing to advance at an ever-increasing pace and "is making electronic commerce attractive to even the smallest of businesses... which (supposedly) stand to gain tremendous business advantages from implementing internet technology" (Berranger et al, 2001, p.197). Similarly, despite the slow growth of mobile commerce, the importance of cellular phones as a form of business ICT is becoming more pronounced. While the emergence of the internet, cellular phones and other forms of ICT have significantly altered the way in which both small and larger businesses operate, divergent views exist as to whether the impacts of such technological developments

are indeed favourable or not. On one hand, ICT may be considered "a tool to enhance life" given its desirable direct impacts. In particular, it is claimed that ICT improves productivity, enables business to be conducted outside of an office, and creates new industries. Postman (1990) claims that ICT is merely an improved means to an unimproved end. The impact of ICT upon social fabric is raised by Rogers (1996) noting it may change work roles, information overload, invasion of privacy, computer crime, computer addiction and greater socio economic status inequality.

Less than ten years ago, information and communication technology belonged to the information technology industry; IT managers, systems engineers, and support staff Al-Mashari (2002). Today, information and communication technology is part of the mainstream of business strategy.

During the past decade, banking institutions have witnessed dramatic change in information and telecommunications technologies. For instance, the use of electronic communication, such as electronic bill paying, home banking, and internet transaction has been altering the relationship of business-to-business (B2B) and business-to-customer (B2C). The marketing accessibility of financial institutions is extended and increased to remote areas or countries via the new telecommunications technology. Hence, the role of ICT investments becomes more important in the banking industry Clark and Mills (2003).

These issues on ICT-banking are international. Since the consolidation of financial institutions may take place across countries with different regulatory rules, the international supervision on the banking institutions regulation is urgent. In other words, banking institutions must set up proper banking regulations in order to satisfy the needs of the international ICT-banking. Via the efforts of international regulations such as the Basel Accord, customers can be securely protected, transactions can be smoothly processed, and

operations are tightly monitored by the supervisory bodies that join this Accord. The Basel Accord requires banks in member countries to maintain adequate capitals and disclose related information to the public. Consequently, commercial banks become more transparent across countries and thus, more efficient than ever before Al-Mashari (2002).

1.1.1 Commercial banks in Kenya

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

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. The commercial banks offer corporate and retail banking services but a small number, mainly comprising the larger banks, offer other services including investment banking.

The Kenyan Banking sector has demonstrated a solid growth over the past few years. The industry continues to offer significant profit opportunities for the major participants. Banks

generally earn their revenues from taking in funds and lending them out at a higher rate. The spread between deposits and loans continues to be around 8.5%, offering much profit potential. Profit after tax of the overall banking system increased by 38.61%, or Kshs 5.08 billion, from Kshs 13.15 billion in December 2005 to Kshs 18.22 billion in December 2006. This growth is a continuation of the strong growth in profit after taxes that the industry has achieved for the past several years. The increase in profit reflected an increase in interest income on loans and advances, which rose by 14.36% or Kshs 5.51 billion to Kshs 43.9 billion in December 2006 from Kshs 38.39 billion in December 2005. The increase in interest income was due to the growth of 16% in loans given out. The rate on loans in the industry has been stable at an average of 11% (The Kenyan Banking Sector Report, 2007).

Return on Equity (ROE) and Return on Assets (ROA) have increased over the years. Returns of 23.03% and 2.74% were generated respectively in 2006. Shareholder equity stretched by 16% from Kshs 79.16 billion in 2005 to Kshs 91.82 billion in December 2006. Due to the improved economic environment, total assets expanded by 17.8% in 2006 to stand at Kshs 809.5 billion compared to 6.7% growth recorded in the previous period. The asset growth was funded by an increase in deposits, retained profits and fresh capital injection. A couple of examples of capital injections are Diamond Trust Bank, which raised Kshs 776 million of capital through a rights issue. Family Finance Bank raised Kshs 500 million through a private placement from 6,500 new shareholders (The Kenyan Banking Sector Report (2007)).

Loans and advances constituted 51% of the total assets, while government securities constituted 19% of total assets in December 2006. Advances to deposit ratio went down to 63.72% in 2006 from 66.06% in 2005. Growth in deposits (20%) was greater than the growth in loans (17%). Investment by banks in government securities increased by 16% in 2006. Furthermore, there was a 37% growth in loans to other banking institutions. Both these growths led to the growth in loans being less than the growth in deposits as the balance 3%

deposits were lent out to other banks and invested in government securities. As a result of increased lending to other banks, the asset quality measured by the ratio of net non-performing loans to net loans improved from 7.88% to 4.98% (Levet&Paturel, 2006).

Key issues affecting the banking industry in Kenya include ,changes in the regulatory framework, where liberalization exists but the market still continues to be restrictive, declining interest margins due to customer pressure leading to mergers and reorganizations, increased demand for non-traditional services including the automation of a large number of services and a move towards emphasis on the customer rather than the product and introduction of non-traditional players, who now offer financial services products.

The ensuing stable macroeconomic environment has provided the impetus for growth in the banking sector. The relative stability of the Kenyan Shilling after the 2002 general election resulted in smaller FX spreads. This has forced banks to rely on core business activities to generate revenues. The key avenues that all banks are focusing on are: cash management, customer service, expanding branch network and investment in technology.

Among the key trends is what appears to be the strong emergence of technology driven banking services in Kenya .the arrival of mobile phone in Kenya in line with the global trends. Banking is edging away from over reliance on traditional banking halls to other platforms supported by technology and in particular telecommunications. This is emerging as threat to the banks because it has enabled non bank competitors like Safaricom to short circuit banks by offering cheap money transfer se Banking in Kenya is undergoing dramatic transformation and several things are happening that have left many banks fighting for their survival (Levet&Paturel, 2006).

A trend that has emerged strongly in the recent years is for the banks to try and curve out the under exploited but potentially viable niches. The distinction between the traditionally big

banks and small banks is somewhat fading as far as product offering is concerned. There is an emerging strategy of the banks trying to curve out underexploited but potentially viable niches like mortgage financing. There seems to have been some paradigm shift especially services that eliminate the need for having a bank account (The Kenyan Banking Sector Report, 2007).

1.1.2 ICT sector in Kenya

Kenya, a country on the eastern coast of Africa, covers a surface area of 582,664 square kilometres with a population of about 30 million. The capital city is Nairobi with a population of about 3 million people. Other big cities and towns include Mombasa, Kisumu, Nakuru and Eldoret. In 2003 the GDP per capita was about US\$ 390.

From introduction of telecommunication services in the country up to 1977, the services in Kenya were managed as part of a regional network with neighbouring Tanzania and Uganda. In 1977, the East African Community under which the regional telecommunications services operated collapsed and as a result, the Government of Kenya established Kenya Posts and Telecommunications Corporation (KP&TC) to run the services (www.cck.go.ke)

A telecommunications policy statement was issued in 1997 that set out the government vision on telecommunications development to the year 2015. The challenge at that time was to transform the existing policy structure from one designed for a monopoly to a policy managing a liberalized telecommunication market (www.cck.go.ke).

The government separated the functions and management of the sector. This clarified roles for the policy, regulatory and operational responsibilities with the government and specifically the Ministry of Transport and Communications retaining policy guidance. In

1998/99, the government launched the telecommunications sector reform and introduced competition in certain market segments, while at the same time disbanding KP&TC.

Since the launch of the telecommunication sector reform, Kenya has made great strides in the expansion of telecommunications services. From 1999 to-date, the government has implemented policy reforms that have resulted in a number of structural changes. The main structural changes that have been experienced include redefinition and clarification of roles for policymaking, market regulation, dispute resolution and operation of services among multiple players. In the operation of services, multiple operators are competing in various market segments based on a policy of the private sector operating in a competitive environment that also safeguards consumer interest (information.go.ke).

While the growth of the ICT sector in Kenya has been significantly influenced by global trends, it can be evaluated in terms of number of fixed and mobile telephone lines; the tele-density; the number of computers and services; Internet Service Providers (ISPs), the number of Internet users; broadcasting stations; and market share of each one of them (information.go.ke).

1.2 Statement of the Problem

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 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. 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 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.

Kenya Commercial Bank just like other commercial banks in Kenya has introduced information and communication technology in its operations. Factors that lead to adoption of ICT by Kenya commercial banks have not been documented. The researcher did not come across any previous study that focused on factors influencing adoption of ICT banking in Kenyan commercial banks. Kahigu (2004), for instance, did a study on the enabling role of ICT in the business re-engineering, a 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. There is no known study that has been done on factors influencing adoption of ICT banking in Kenya Commercial Bank. This study seeks to bridge this gap in knowledge.

1.3 Purpose of the Study

This study intends to find out the factors influencing the adoption of ICT Banking in commercial banks in Kenya.

1.4 Research Objectives

1.4.1 General objective

To establish the factors influencing adoption of ICT in commercial banks in Kenya, a case study of Kenya Commercial Bank Kencom house branch Nairobi.

1.4.2 Specific Objectives

The specific objectives of this study are;

- i) To establish the extent to which operational efficiency has influenced the adoption of ICT at Kenya Commercial Bank.
- ii) To establish the extent cost cutting has influenced the adoption of ICT at Kenya Commercial Bank.
- iii) To assess how customer service delivery has influenced the adoption of information and communications technology in Kenya Commercial Bank.
- iv) To determine the extent to which competitive advantage has influenced adoption of ICT at Kenya Commercial Bank.

1.5 Research Questions

- i) To what extent does operational efficiency influence the adoption of ICT at Kenya Commercial Bank?
- ii) To what extent does cost cutting influence adoption of information and communications technology at Kenya Commercial Bank?
- iii) What is the effect on customer services in the adoption of information and communications technology at Kenya Commercial Bank?

- iv) To what extent does competitive advantage influence the adoption of ICT at Kenya Commercial Bank?

1.6 Significance of the Study

The study would be of great importance to the management of the Kenya Commercial Bank in the sense that the information will act as a source of data that will help in having an insight to how technology can be used in giving the organization leverage within a competitive environment.

Kenya Commercial Bank would be well informed on the effective performance of e-business services delivery and quality products. They will be able to be well informed on the clients feeling about the technology and the services provided.

This study would also assist clients in that they will be educated on new information communication technology which will be available in the banking industry. The information of new product and service delivery channels available will assist in the increased awareness of the capabilities of the bank. It will enable them to make a choice of the best bank to transact business with.

This research will be able to provide an immediate source of information to the researchers who may be interested in studying technology and the banking industry.

1.7 Delimitations of the Study

The main delimitation of this study was its inability to include more organizations. This was a case study focusing on factors influencing adoption of ICT in Kenya Commercial Bank where the findings will be generalized to all banking institutions in Kenya. The study should

have covered more institutions across all sectors so as to provide a more broad based analysis. However, time and resources were some of the other limitations.

1.8 Limitations of the Study

Some respondents feared that the information obtained would be used against them; this could scare away respondents from filling the questionnaires. This fear was overcome by first seeking for permission from Kenya Commercial bank management to meet the respondents and to tell them the intentions of the study. The management ultimately convinced respondents that there would be confidentiality to the information being provided therefore reducing the fear.

The other limitation was confidentiality of organizational information. There may be unwillingness of informants to give out information and fill questionnaires. Use of letters of introduction from Nairobi University to introduce the researcher to the organization will let them learn that it is purely for academic purposes

1.9 Assumptions of the Study

The researcher made the following basic assumption during the study;

Kenya Commercial Bank provides a true representation of the rest of the 43 commercial banks in Kenya.

The study should have covered more institutions across all sectors so as to provide a more broad based analysis.

1.10 Definitions of Significant Terms CHAPTER TWO

The following are the significant terms used in the study;

Information Communication Technology or ICT refers to the combination of informatics technology with other, related technologies, specifically communication technology.

Performance refers to the outcome of all of the organization's operations and strategies. It is the extent to which ICT meets the expectations regarding how it should function or behave in a particular context, situation, job or circumstance.

Adoption refers to the acquisition of ICT in the banking industry.

Banking refers to the business conducted or services offered by a bank. In general terms, it is the business activity of accepting and safeguarding money owned by other individuals and entities and then lending out the money in order to earn a profit.

Adoption of ICT refers to the uptake by consumers of organisations of information and technology into the operations of the organisation

1.11 Summary

The study sought to establish the factors influencing adoption of ICT in Banking Institutions focusing on Kenya Commercial Bank. A sample of 50 staff was selected for the purpose of the study. They were deemed sufficient to provide adequate data for the study. This was due to the fact that there are two arms of the bank, controls and business each headed by Deputy Chief Executive, 9 divisional directors, and 5 regional offices each with a regional business manager, a regional operations manager and senior managers consisting of department heads and directors.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter will review the various literatures that are related to the study and sentiments of various authorities in the area of study.

2.2 ICT and Banking

The level of adoption and application of ICT may also affect the efficiency of banks. ICT is used by management and staff to transform “raw” inputs into useful inputs. It adds value by creating new sources of information in an organization, rather than simply automating existing processes Zuboff (2005). It is viewed within a bank at two main levels.

Firstly there is overall investment in ICT. The financial sector in Kenya is continuously undertaking technology infrastructure projects, platform automation and information and transaction process upgrading. These are aimed at integrating the traditional front-office and back office systems to reduce costs and enable the operation of smaller bank branches with fewer but more highly qualified staff. Between 1998 and 2003 overall ICT expenditure (including depreciation) for the banking sector increased. Secondly, there is the ICT functionality deployed in the production and service delivery processes, which focuses on its ability to perform certain functions within the organization. The purchase of a computer in itself adds nothing to the productive capability of an organization. It is only after this computer has been integrated into the production technology of the firm that it adds value - the same is true of labour and other capital inputs FreiHarker& Hunter (1998). The selection of ICT projects and their management are crucial factors in transforming the investment in

ICT into effective systems aimed at generating higher profits, which has implications on bank efficiency.

2.3 Development of ICT adoption

The continuous and growing interest in ICT adoption is attributed to the exponential growth in the number of ICT users worldwide, with a bigger increase reported from users in developing countries especially in the Asia Pacific as compared to the USA and the European regions International Telecommunication Union (<http://itu.int/ITU-D/ict/statistics>). Specifically, it has been discovered that countries with higher GDP per capita, literacy rate, well-established telecommunication infrastructure and political stability will enjoy higher dispersion of internet. That is the reason why advanced economies such as Hong Kong, Singapore, South Korea, and Taiwan lead Asia in internet development, followed by countries like Malaysia, Brunei, and Thailand Hao and Chow (2004).

In Malaysia, for instance, it has been reported in the Malaysian Communications and Multimedia Commission's web site (www.mcmc.gov.my) that the penetration of internet in 2007 is about half the size of the population (47.8 percent of 28,294,120 people) as opposed to only 3,700,000 users in 2000 International Telecommunication Unit (www.itu.int). The strong growth is due to the initiatives undertaken by the Malaysian government. For example, the Seventh Economy Plan (1996-2000) serves as testament to the country's serious attention on the necessary development of infrastructure and environment of ICT so as to ensure that they are in place to enable the country to move rapidly into the information age. In fact, investment in ICT in Malaysia has expanded at a rate of 9.2 percent per annum from RM 3.8 billion in 1995 to RM 5.9 billion in 2000 Economic Planning Unit (2001). Such efforts have been continued and expanded to the small and medium enterprises (SMEs) in the Ninth

Malaysian Plan (2006-2010) where various funds have been made available for ICT development in these enterprises.

In addition, the National Information Technology Agenda was formulated in 1996 to help provide an ICT framework to develop Malaysia into an information and knowledge-based society by 2020 (www.nitc.org.my/index.shtml). The ICT industry received further boost when the Multimedia Super Corridor Malaysia (MSC Malaysia) project was conceptualized in 1996 to expedite the transformation process for more information (Chong, 2006). The MSC Malaysia offers an ideal growth environment for the ICTSMEs to transform themselves into world class companies through various incentives provided under the Promotion of Investment Act 1986. As of March 2008, there are 2,006 MSC Malaysia-status companies, in which more than 70 percent of them are locally-owned, largely SMEs MSC Malaysia web site (www.msomalaysia.my).

It can thus be concluded that in many countries, the roles played by the government and the growing number of internet users have far-fetched implications to SMEs contemplating on using internet-based ICT to reach larger pool of potential customers locally and worldwide. While several authors have identified various factors affecting the adoption or non-adoption of web sites and e-commerce, there remain gaps to be addressed. It has been reported that studies conducted so far provide narrow focus on SMEs adopting e-commerce and that they are all fragmented. Tan et al (2009) in their analysis of prior studies concluded that while diffusion of innovation (DOI) remains a popular model in investigating the behavior of users in adopting new technological innovation, there are tendencies for researchers to combine the constructs of different models, such as the theory of reasoned action, theory of planned behavior, and the technology acceptance model (Speece 2003). This has resulted in different outcomes. In fact, it has been identified that studies using DOI alone yielded different results

Hussin and Noor (2005) although the countries studied shared close geographical proximity. Further, there is paucity of research combining the variables of the DOI model and the benefits and barriers of internet-based ICT adoption.

2.4 Factors determining the demand for ICT- banking

Since the main objective of the paper is to identify the factors that influence internet banking, the theoretical underpinnings and provide some empirical evidences on such potential factors. It should be noted that empirical evidences has been indeed scant in the literature until now. One factor that determines the level of demand for ICT- banking services in commercial banks is that of the number of people who can be able to operate ICT tools for example ATM. Moreover the cost and speed of internet connections have also been argued to be important elements Li and Worthington (2004). The latter authors also argued that customer confidence on ICT- banking transactions is yet another factor. This depends on how the banks would deal with any erroneous transactional and security concerns that may occur during online banking. It is good to point out that Stewart (1999) claimed that the failure of the Internet in retail banking is largely attributable due to the lack of trust consumers have in the electronic channels.

Stewart (1999) made this claim on lack of trust, we have noticed through our survey that some customers still lack trust on the Internet banking system. Those who usually use Internet banking claim that at times they doubt the security aspects of the system but due to its convenience, they still use it. Therefore even if in the current days Internet banking is a success, the lack of trust is still an important aspect (Stork 2005).

Provision of infrastructural facilities is another factor that could lead to quicker diffusion of innovation. Study from Jayawardhena and Foley (2000) reveals that there is a significant correlation between the website downloaded speed and web-users satisfaction. Moreover

other features such as content and design, interactivity, navigation and security are relevant according to the author. Broderick and Vachirapornpuk (2002) found through observations and narrative analysis of internet banking customers, that problems such as slowness, poor navigational possibilities, poor interactivity and critical incidents such as lack of help and empathy by internet banking service providers, triggered considerable switching and negative word-of-mouth.

The type of relationship customers wish to maintain, and this differs, with banks is another aspect to consider. Indeed there is evidence to suggest that in the choice of communication the channel will affect on the development of relationships. In the debate on the degree to which face to face communication and inter-personal relationships is more efficient than behind-the-curtain services, there exist a number of studies in literature to significantly conclude that indeed proximity and personal relations do matter Mattila and Pentto (2002). This implies that customers desiring social and psychological benefits by establishing personal relationships with banks will prefer face to face interactions, at the detriment of ICT-banking. Tomiuk and Pineseault (2001) concurred with the above view and stated that the lesser degree of 'richness' and 'sound presence' of ICT-banking environment will affect banks' ability to create a trusting relationship between their customers and employees. On the other hand, for those customers whose relationship is primarily based in efficiency of services, ICT-banking will be an attractive alternative.

2.5 ICT in Kenya

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 bank 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 will facilitate the inter-bank financial data transfer. The development of e-banking services is expected to decongest banking halls and reduce 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 (Samtani et al 2003).

The banking sector has also over years continued to introduce a wide range of new products, prompted by increased competition, embracing ICT and enhanced customer needs. As a marketing strategy, the new products offered in this segment of market, continue to assume local development brand names to suit the domestic environment and targeting the larger segment of local customer base. Among the products, include Islamic banking which was introduced in 2005, tailored in line with "Shariah" principles, Equity bank, Dubai bank and Faulu among others have so far introduced Islamic banking products in the market. All the above clearly indicate that, Kenya's banking sector has great developments like any other banking market in the world.

2.6.1 Operational Efficiency

Generally, information- and communication technologies (ICTs) are being introduced in banks in order to increase operational efficiency, quality, and transparency. However, besides these undisputable gains, the introduction of ICTs also leads to substantial changes in the power relationships among all involved actors. Consequently, and as a result of ICT-enhanced or modified operations, some of the actors will increase their power, while others will loose some of their power. Also as a result of work process acceleration through

standardization, digitization, and automation, but also as a result of faster information processing and accelerated information procurement, ICTs tend to increase time efficiency.

However profit-maximizing firms which, all else being equal, respond to changes in the relative prices of production inputs by increasing (reducing) their purchases of those factors which have fallen (risen) in price. In recent years ICTs have been characterized by rapid declines in price: performance ratios which have increased their attractiveness relative to the use of non-ICT capital inputs and other inputs (such as unskilled labour) which are not complementary to the use of ICTs. In principle, ICT investments should help early-adopting firms to achieve higher levels of performance, for example, by improving the efficiency with which various tasks are carried out by different sections of the workforce; and /or by facilitating more rapid monitoring of trends in customer demand and improvements in communications with suppliers of key components and services. However, in common with some previous new 'general purpose' technologies such as electrification, the short-term impact of ICT investments on firm-level performance may be small or even negative due to the time and resources needed to develop complementary production inputs (Helpman and Trajtenberg, 1998).

Jensen (2002) further posits that e-mail is used for correspondence, document exchange, technical advice, managing projects, arranging meetings, and exchanging research ideas, but it is still limited for accessing formal information resources. 25 % of e-mail is replacing faxes, 10 % e-mails replacing phone calls and 65 % of the e-mails standing for communication that would not have been made without an e-mail-system. Users report that Internet has increased efficiency and reduced information costs, although it is still an under-utilized resource (Comunale 2004).

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. Berger and Humphrey (1997) 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.

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 sector in Nigeria 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.

2.6.2 Cost Cutting

Cost reduction is a reality, as no business wants to be spending money where it is not necessary. But in order to cut costs successfully, it is necessary to reduce expenditure without crippling essential operations while at the same time balancing the need to take decisive action with the ability to make smart decisions about where costs can realistically be reduced. The introduction of ICTs in banks has played a major role in the reduction of such costs. In

this context firms with relatively high (low) proportions of skilled workers can be expected to have a comparative advantage (disadvantage) in minimizing the costs both of ICT adoption and of learning how to make best and most intensive use of ICTs. For example, as anticipated by Schultz (1975), highly-educated workers are likely to be best-equipped to respond to the new product development opportunities made possible by ICTs. In production and service delivery areas, high-skilled workers can be expected to adapt more quickly to new forms of work organization than low skilled workers. In respect of investments in ICT-related training, all else being equal, less such training will be necessary in firms with pre-existing high levels of skill.

ICT has introduced what is known as the 'Networked economy', where successful businesses are linked with their suppliers, internal manufacturing processes, shippers and customers in real-time. Businesses are now able to move data and communicate with each other in real time. This has transformed the way businesses are being done. ICT has the capacity to cut costs of coordination, communication and information processing and many businesses have taken advantage of this Brynjolfsson and Hitt (2000).

ICT and e-commerce offer benefits for a wide range of business processes. At firm level, ICT and its applications can make communication within the firm faster and make the management of the firm's resources more efficient. Seamless transfer of information through shared electronic files and networked computers increases the efficiency of business processes such as documentation, data processing and other back-office functions (*e.g.* organizing incoming orders and preparing invoices). Increasingly sophisticated ICT applications such as KMS (Knowledge Management System) and ERP (Enterprise Resource Planning) allow firms to store, share and use their acquired knowledge and know-how. For example, customer databases with a history of client-specific correspondence help managers and employees to respond more effectively to customers.

At inter-firm level, the Internet and e-commerce have great potential for reducing transaction costs and increasing the speed and reliability of transactions. They can also reduce inefficiencies resulting from lack of co-ordination between firms in the value chain. Internet-based B2B interaction and real-time communication can reduce information asymmetries between buyers and suppliers and build closer relationships among trading partners Moodley(2002). In fact, adopters of e-commerce tend reduce transaction costs, increase transaction speed and reliability, and extract maximum value from transactions in their value chains OECD (2002).

2.6.3 Customer Service

Consumers are increasingly interested in communicating with companies via new and multiple channels: not just voice, but also email, web chat, SMS and so on. A company's ability to respond to customer requests wherever they are, and via whatever device they are using at the time, will have an increasingly significant impact on how effectively an organization connects with their customers. Companies that rely on being able to contact customers at home need to address this reality of increasingly mobile consumers. Organizations expecting to find customers behind their desks must also develop new interaction models to guarantee being able to contact current and potential customers. The need to give better and more efficient services will be influenced by the adoption of ICT. Customer service will be improved due to faster and more accurate transaction processing. Services will be brought closer to the clients reducing operational costs and benefiting clients in that they will not have to travel long distances.

Irechukwu (2000) lists some banking services that have been revolutionized through the use of ICT as including account opening, customer account mandate, and transaction processing and recording. Information and Communication Technology has provided self-service

facilities (automated customer service machines) from where prospective customers can complete their account opening documents direct online. It assists customers to validate their account numbers and receive instruction on when and how to receive their cheque books, credit and debit cards. Communication Technology deals with the Physical devices and software that link various computer hardware components and transfer data from one physical location to another Laudon and Laudon (2001). ICT products in use in the banking industry include Automated Teller Machine, Smart Cards, Telephone Banking, MICR, Electronic Funds Transfer, and Electronic Data Interchange, Electronic Home and Office Banking. Increase in the rate of adoption and the spread of ICT products, especially the use of cards has reduced the influence of cash on financial transactions. In the B2C context, the Internet and e-commerce can be effective tools for better communication. A corporate Web site that provides information on products, services or technologies can enhance the quality of a firm's services to customers and attract new customers. By collecting information on customers' needs, it can be used for product development or innovation. A home page with a direct link to the corporate e-mail account provides an easy-to-access contact point. For those in different time zones, 24-hour availability of the contact is especially attractive. Eurostat's E-commerce Pilot Survey shows that SMEs' motives for Internet commerce include reaching new/more customers, geographic expansion of market and improvement of service quality. There has also been a very modest move away from cash. Some payments are now being automated and absolute volumes of paper transactions have declined under the impact of electronic transaction brought about by the application of ICT to the payment system in Kenya.

According to Mahatanankoon, et al. (2005), mobile commerce is in its infancy, however, various authorities and literature posit that the pervasiveness of cellular technologies make m-commerce viable. Although globally, the adoption of m-commerce has been slow due to

various barriers Samtani, et al. (2003). A companies' intranet and electronically integrated customer database not only provide the latest client-related information, which better equips managers and employees for responding to customer enquiries, but also make business processes and knowledge accumulation more efficient. All personnel can have valuable business knowledge and experience, once entered into the office computer, simultaneously. This is very different from paper records, which can normally only be consulted by one person at a time and must be photocopied for wider circulation (OECD, 2004).

2.6.4 Competitive advantage

The impact of ICT on the competitiveness of a firm is huge in this increasing globalised world to achieve its performance objectives. However, introduction of ICT also demanded the businesses to be more competitive since the convenience of internet has opened more options for the consumers to search for the best and cheapest products virtually from anywhere in the world. Thus, in order to stay competitive, firms have to continually upgrade the quality of products and adopt the cheapest methods of production. Adoption of ICT has influenced the content and quality of banking operations. From all indications, ICT presents great potential for business process reengineering of Kenyan Banks. Investment in information and communication technology should form an important component in the overall strategy of banking operators to ensure effective performance. It is imperative for bank management to intensify investment in ICT products to facilitate speed, convenience, and accurate services, or otherwise lose out to their competitors. The banking industry in Nigeria presents ICT providers with great opportunity to market their innovations. Success in this area however depends on how they can customize their services to appeal to the ready minds of various stakeholders in the industry.

Although ICT can no doubt improve the effectiveness and efficiency of banks if properly utilize, analyses from the perspective of resource based view are doubtful on the potential of ICT in generating sustainable competitive advantage of the firm due to tradability of ICT hardware and software in the market. ICT infrastructure that is complex, hard to understand, and hard to imitate can have direct impact on sustainable competitive advantage of the bank.

The concept of innovation often appears in the context of technology adoption and has also been used in context of e-commerce adoption research Birch (1989) conversely; skill shortages and lack of knowledge are found to be inhibiting adoption factors along with other less obvious barriers, advantages and opportunities Al-Mashari (2002).

One of the industries being radically transformed by ICTs is banking. ICT- mediated services such as automatic teller machines, electronic fund transfer, electronic smart cards, cell phone banking among others, are transforming the traditional ways of banking and providing competitive edge for banks that provide those services. Consequently, attempt was made to find out the level of utilization of these services in the country. However, it can be speculated that the less patronage of the e-banking services could be linked to the usual problems associated with adoption of new technologies. Adoption and innovation theory has indicated that a number factors namely; channel of communication of the innovation, time of diffusion of the innovation and the community of potential adopters affect the rate of adoption of new technologies or innovation. These factors, in addition to others may have accounted for the poor the adoption of e-banking services.

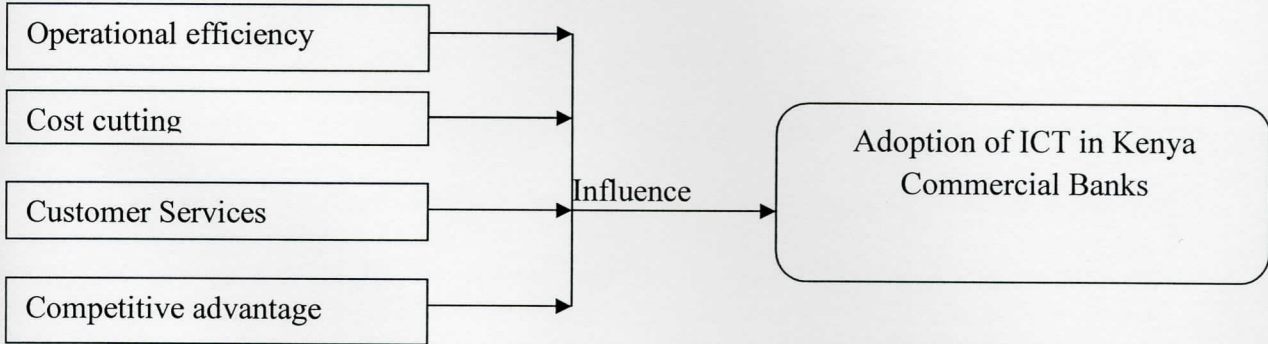
The information and communication technologies (ICTs), particularly the use of internet to conduct online business is quickly changing the conventional way of doing business among brick and mortal companies. With the strong waves of globalization and liberalization across the world, ICT is believed to be the most cost-efficient tool to help companies gain bigger

markets and the ability to compete with larger organizations in attracting customers to their products, services and information (Tan et al.,2009). This is in light with the advantages inherent in internet such as speed, user-friendliness, low cost and wide accessibility which has allowed electronic commerce to be increasingly diffused globally, bringing countries together into a global networked economy (Gibbs and Kraemer, 2004).

2.7 Conceptual Framework

The rate at which new technologies are adopted and incorporated into the productive process that is adoption of a new technology is considered to be a major factor in driving the pace of economic growth. Today’s banking institutions have been deeply influenced by Information and Communication Technologies (ICT) and the application of ICT among business is widespread. ICT are rapidly changing global production, work and business methods and trade and consumption patterns in and between enterprises and consumers. It has been stressed that every business must bring ICT into their business operation and take advantage of the benefits they offer. Nowadays businesses are increasingly using and adopting information and communication technology due to its effect on the general performance improvement; improved customer services, cost factors and competition factors.

Adoption of ICT in Kenya Commercial Bank



Independent variables

Dependent variable

Figure 1 Conceptual Framework

2.8 Summary

This chapter reviewed the literature on ICT and banking with its effect on the efficiency and budgets of banks being reviewed. It also examined the adoption of ICT in a various economies around the world and its contribution to the growth of those economies. Factors that determine the demand of ICT led banking have also been examined with the number of people able to operate ICT tools being a contributor as well as cost and speed of internet, trust, provision of infrastructural facilities and accessibility featuring in the literature. The landscape of ICT in Kenya has been examined under operational efficiency, cost cutting, customer service and competitive advantage. Finally the conceptual framework for the study has been explained with the independent variables being the operational efficiency, cost cutting, customer service and competitive advantage and the dependent variable being the adoption of ICT in Kenya Commercial Banks. The following chapter explains the methodology used to conduct this study.

3.3 Target Population

According to Cooper and Schindler (2006), population refers to all units of a particular type of entity. Population may be restricted by age, gender, or any other attributes such as geographical location. The target population is that population to which a researcher desires to take a broad view on the results of the study. The target population as the section of a population that qualify or fit the criteria required to fully respond to the interviewer or questionnaire. It is a more specific definition of the population and gives certain features that classify that target population. For purposes of this study, the target population consisted

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out the research methodology that was adopted so as to meet the objective stated in chapter one of this study. The research setting, population of interest, sample design and data collection instruments as well as data analysis techniques.

3.2 Research Design

This study used a case study research design. Case study design is based on an in-depth investigation of a single individual, group, or event to explore causation in order to identify underlying principles. A case study has more weight on a full appropriate analysis of a smaller environment and its inter-relations. It is an empirical inquiry that investigates a phenomenon within its real-life context (Yin, 2009). In an attempt to find out the factors underlying the adoption of ICT banking in Kenya commercial banks, a case study method was found appropriate.

3.3 Target Population

According to Cooper and Schindler (2006), population refers to all units of a particular type of entity. Population may be restricted by age, gender, or any other attribute such as geographical location. The target population is that population to which a researcher desires to take a broad view on the results of the study. The target population as the section of a population that qualify or fit the criteria required to ably respond to the interviewer or questionnaire. It is a more specific definition under the population and gives certain features that classify that target population. For purposes of this study, the target population consisted

of senior managers, ICT department staff, heads of departments and directors, adding up to 50 individuals who worked in headquarters and regional offices of Kenya Commercial Bank.

Table 3.1 Population Distribution

Category	Population
HQ Departmental heads, section heads and Directors	76
Regional Managers and unit managers	52
ICT Staff	40
Totals	168

Source: Kenya Commercial Bank, 2010

3.4 Sampling Procedure

This study used stratified random sampling to obtain a study sample. As recommended by Mugenda and Mugenda (2003), this study took 20% of the population from each category. Mugenda and Mugenda (2003) recommend a sample of 10% to 30% for a representative sample. The sample size was therefore 50 respondents as indicated by Table 3.2.

Table 3.2 Sample Size

Category	Population	Sample
HQ Departmental heads, section heads and Directors	76	22
Regional Managers and unit managers	52	17
ICT Staff	40	11
Totals	168	50

This number was realistic and enabled the study to delve into the finer details. This enabled the researcher to get the relevant information necessary to answer the research questions.

3.5 Methods of Data Collection

The questionnaire method was a convenient method for the study because it comes in print form and can be distributed to respondents, especially, some of who the researcher may not see directly. The questionnaire comprised of close-ended questions, with a few open-ended ones. Data collection utilized both quantitative and qualitative research. Primary data was collected by way of distributing questionnaires that were self-filing to all the senior managers, staff and directors at the Kenya Commercial Bank working in the institutions headquarters.

Data collection utilized both quantitative and qualitative research. Primary data was collected by way of distributing questionnaires that were self administered to all the head of departments, directors and senior managers in the Kenya Commercial Bank.

3.6 Validity and Reliability

For validity of the instrument, the researcher conducted a pilot survey. This involved pre-testing the questionnaire with selected staff members. Dillman (1978) suggested that a pilot study is conducted to ensure clarity and proper interpretation of the questionnaire by the expected respondents. Validity is concerned with whether the findings are really about what they appear to be about (Saunders et al., 2007). To test for validity, the data collection instrument was administered to conveniently selected respondents. According to Saunders et al (2007), reliability refers to the consistency of measurement and is frequently assessed using the test–retest reliability method. Reliability is increased by including many similar items on a measure, by testing a diverse sample of individuals and by using uniform testing procedures. The researcher intended to select a pilot group of three individuals from Kenya Commercial Bank to test the reliability of the research instrument. This was achieved by first

stratifying the individuals according to level of management, level of education, number of years worked.

3.7 Operational Definitions of Variables

The Operational definitions of variables convey the meaning of the dependent and independent variables in sufficient preciseness with the variables, their indicators, measures, scales, and method of data analysis being explained.

Table 3.3 Operational definition of variable

Variable	Indicators	Measure	Scale	Data analysis
Dependent Variables Adoption of ICT	New technological equipment	Teller Machines Smart Cards Telephone Banking Electronic Funds Transfer Electronic Data Interchange Electronic Home banking	Likert scale. Likert scale.	Mean
Independent Variables 1. Operational efficiency	Improved operations Shorter queues in the banking halls Quick turnaround per client in being served	Improvement of operational efficiency of Institutions The improvement of operational efficiency in the organization Improvement of the quality and quantity of information for operations to ease decision making Has the implementation of the new T24 core banking software has improved operational efficiency Are banking institutions adopting ICT to improve their operations Rate the adoption of the following ICT's in carrying out business activities	Likert scale. Likert scale Likert Scale Likert Scale	Mean

2. Cost cutting	Cost reduction	<p>Has the adoption of ICT improved cost reduction at Kenya Commercial Bank in terms of service delivery to the customers</p> <p>Has the introduction of self-service points can reduced the cost of service delivery to Kenya Commercial Bank customers</p> <p>Have new payment systems like MPESA systems lowered costs of loan repayment and savings deposits to Kenya Commercial Bank customers</p>	<p>Likert scale.</p> <p>Likert Scale</p> <p>Likert Scale</p> <p>Likert Scale</p>	Mean
3. Customer Services	Fewer complaints	<p>How has the adoption of ICT contributed to improvement in customer service the following areas</p> <p>Has new payment systems like MPESA systems improved customer service to Kenya Commercial Bank customers</p> <p>Has internet services like Kentainer online tank ordering systems improved customer service</p> <p>Has electronic payment systems like real time gross settlement and electronic funds transfer systems improve customer service</p> <p>Does services like SMS banking will improve customer service to Kenya Commercial Bank customers</p> <p>Does Kenya Commercial Bank have</p>	<p>Likert scale.</p> <p>Likert scale.</p> <p>Likert Scale</p>	Mean

		a way of getting honest feedback from its customers		
4. Competitive advantage		How has ICT influenced your organization in increasing its competitive advantage Rate the role of the following ICT techniques in helping Kenya Commercial Bank gain competitive advantage How would you rate the role of ICT in proper forecasting in your organization	Likert Scale Likert Scale Likert Scale	Mean

3.8 Methods of Data Analysis

Data analysis is the whole process, which started immediately after data collection and ended with the interpretation and the processing of results Mugenda and Mugenda (2003). Before processing the data; the questionnaires were edited for completeness and consistency. This ensured that the questionnaires were completed as required and were coded to facilitate statistical analysis. Quantitative data collected through closed ended questions in the questionnaire were processed with the aid of statistical package for social sciences (SPSS). Descriptive statistics such as frequency distribution, percentages and means were used for analysis of quantitative data. The results were presented using tables and charts. Content

analysis was done for qualitative data collected through open ended questions in the questionnaire and results presented in prose.

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

3.9 Expected Outcomes

The study was expected to guide management by the data obtained to show that adoption of ICT will improve service delivery and overall institutional performance.

3.10 Summary

The research methodology laid out the methods and techniques of research that was used in the research. It defined the research problems, designed how it would be researched, analyzed the approach and outline the details and samples of respondents.

Table 4.1

Table 4.1 ICT banking adoption and the improvement of operational efficiency of commercial banks

	Frequency	percent
Disagree	1	1
Neutral	3	6
Agree	24	48
Strongly agree	22	43
Total	50	100

The researcher found out that operational efficiency had improved with the adoption of ICT banking. This was due to ease of account opening, validation of customers' account numbers, cheque books, and debit cards acquisition. Withdrawals also became easy through ATM

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter documents and presents the findings, discussions, conclusions and recommendations on the factors influencing adoption of ICT in Kenya Commercial bank Kencom Branch, Nairobi County, Kenya. The study recorded a response rate of 100%.

4.1 Operational efficiency

The study sought to find out the operational efficiency derived from ICT adoption by the commercial banks. The findings are shown in the following section.

4.1.1 ICT banking adoption and the improvement of operational efficiency of commercial banks

This section sought to get the level of agreement from on whether ICT adoption had led to improvement of operational efficiency in the commercial banks. The results are shown in

Table 4.1.

Table 4.1 ICT banking adoption and the improvement of operational efficiency of commercial banks

	Frequency	percent
Disagree	1	1
Neutral	3	6
Agree	24	48
Strongly agree	23	45
Total	50	100

The researcher found out that operational efficiency had improved with the adoption of ICT banking. This was due to ease in account opening, validation of customers' account numbers, cheque books, and debit cards requisition. Withdrawals had also become easy through ATM

provision; there was reduction of time spent in the banking halls either when withdrawing or depositing, faster loan processing and faster statement acquisition. This indicates that with the adoption of ICT banking there will be improved operational efficiency due to efficient and easy account opening, easy access to funds by the clients and having more points of sale POS's. Ease of transfer of customers from one unit to another due to the centralized information which was a process that had been time consuming before the introduction of ICT banking.

4.1.2 Rating of the importance of adoption ICT banking in the improvement of operational efficiency

This section sought to establish the rating on the importance of adopting ICT in the improvement of operational efficiency within the organisation. The results are shown on Table 4.2.

Table 4.2 Rating of the importance of adoption ICT banking in the improvement of operational efficiency

Rates	Frequency	Percent
Very high	13	26
High	29	58
Moderate	4	10
Low	2	3
Negligible	2	3
Total	50	100

The Researcher found various reasons on the improvement of operational efficiency in banks. The reasons were similar to the ones sited for commercial banks and included ease in account opening, validation of customers' account numbers, cheque books, and debit cards requisition. Withdrawals had become easy through ATM provision, reduction of time spent in the banking halls either when withdrawing or depositing, faster loan processing and faster statement acquisition.

4.1.3 Extent to which ICT banking has improved the quality and quantity of information for operations to ease decision making.

This section sought to get the level of extent in which the quality and quantity of information on whether ICT adoption had led to improvement of operational efficiency in the commercial banks. The results are shown in Table 4.3.

Table 4.3 Extent to which ICT banking has improved the quality and quantity of information for operations to ease decision making.

Extent	frequency	Percent
Very great extent	12	23
Great extent	24	47
Moderate extent	7	15
Low extent	4	8
No extent	3	7
Total	50	100

The researcher found out that information had become more precise and reliable. ICT banking had brought about capturing of more data compared to the manual processes. This would lead to timely and sufficient data for decision making. The data was more accurate since all the information was validated at the source since all the customers had to present themselves to the points of account opening and photos taken on the spot. ICT- banking required more information on the clients. This has made it possible to analyze data like lending and spending patterns, which has assisted the institution in planning for the availability of funds for lending, the pattern has also been analyzed and assist in location of ATM's and the partners to use with the most convenient ATM locations. This show with the introduction of ICT banking more accurate information has been captured and various aspects of the information can be analyzed for ease of decision making.

4.1.4 The T24 core banking software and improved operational efficiency

This section sought to get the level of agreement in which the adoption of T24 core banking software had led to improvement of operational efficiency in the commercial banks. The results are shown in Table 4.4.

Table 4.4 The T24 core banking software and improved operational efficiency

Extent	Frequency	Percent
Strongly disagree	2	3
Agree	3	7
Neutral	4	8
Agree	27	54
Strongly agree	14	28
Total	50	100

The researcher found out that operational efficiency as a result of the introduction of the new system. This was mainly due to the fact that the software was able to generate daily reports; it had become more efficient in the operations of the organization. The reports could also be categorized for different levels of management. The researcher further found out that the software had increased operational efficiency through being friendly to staff, hence they were able to produce information fast enough. The T24 software which is the platform for ICT banking was designed to integrate all technologies by having interfaces for them the interface include but are not limited to ATM, POS, smart, debit and credit card interfaces, RTGS integration with other banks, electronic funds transfer, the software had assisted with the ease of integration of ICT-banking technologies.

4.1.5 Commercial banks and ICT banking adoption.

This section was supposed to get the reason behind Commercial banks adopting ICT banking.

The level of agreement whether ICT banking was being adopted for operational efficiency.

The results are represented in Table 4.5.

Table 4.5 Commercial Banks and ICT banking adoption

Extent	Frequency	Percent
Strongly agree	8	17
Agree	24	48
Neutral	9	18
Disagree	5	10
Strongly disagree	4	7
Total	50	100

The researcher found out that the commercial banks needed to enhance their operational efficiencies for them to realize profits. ICT banking adoption had been necessitated by this fact. Commercial banks needed to reduce their operational expenses hence the need to adopt ICT banking. With the introduction of ICT banking operational efficiency had improved due to the reduction of costs in service delivery. The services were brought closer to the clients by technology, staff and clients did not have to travel to far distances POS systems and ATMs which are some of the ICT banking technologies had reduced expenses by, reducing distances travelled and the associated costs hence an overall reduction of the operational costs.

4.1.6 Rating of ICT adoption while carrying out business activities

A scale of 1-5 was used in rating advertising in relation to profitability. The scores “highly important” and “important” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{important} \leq 2.5$). The scores of ‘moderate’ represented in decision. This was equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{moderate} \leq 3.5$). The score of “unimportant” and “very unimportant” represented strong disagreements with the statements on the advertising. This was equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{unimportant} \leq 5.0$).

Table 4.6 Rating of ICT adoption while carrying out business activities

	Mean	Std. Deviation
Automated Teller Machine	1.8687	.77784
Telephone Banking	1.9800	.77824
MICR	2.0100	.77192
Electronic Funds Transfer	2.0100	.91558
Smart cards	2.2100	.90224
Electronic Data Interchange	3.0606	9.77692
Electronic Home banking	3.1700	9.73908
Electronic office banking	3.2700	9.72538

From Table 4.6, Automated Teller Machine was rated the highest important business activity that would benefit from ICT banking. This was represented by a mean score of 1.87. It was followed by telephone banking (1.98), MICR (2.01) and electronic funds transfer (2.01). Further these were followed by smart cards (2.21), electronic data interchange (3.06), Electronic home banking (3.17) and electronic office banking was ranked the last with a mean score of 3.27. The findings would enable commercial banks decide on which

technology was of highest importance to business activities hence assisting in deciding the order of implementation of the various ICT banking technologies. It also assisted in knowing the area of concentration for ICT banking as the ATM.

4.2 Cost Reduction

The study sought to find out the cost reduction benefits accrued from the adoption of ICT in the commercial banks. The results and findings are examined in the following section.

4.2.1 ICT banking and cost reduction at Kenya Commercial Bank in terms of service delivery to Kenya Commercial Bank clients

This section sought the opinion of the as to whether adoption of ICT banking had improved cost reduction at Kenya Commercial Bank in terms of service delivery to clients. The results are shown in Table 4.7.

Table 4.7 ICT banking and cost reduction at Kenya Commercial Bank in terms of service delivery to Kenya Commercial Bank clients

Extent	Frequency	Percent
Strongly disagree	1	3
disagree	4	8
Neutral	19	38
agree	22	43
Strongly agree	4	8
Total	50	100

The researcher found out that reduction of cost while conducting business activities were attributed this to the reduced paper work which made it expensive for Kenya Commercial Bank clients before ICT banking adoption. Other reasons included reduced processing times of transactions that would normally take a long period and many people to process a single

transaction ICT banking, enabled less people to process a transaction within a shorter period of time as opposed to other processing methods that had been previously used for example the ATM which required only the client with the ICT banking whereas initially a withdrawal required about four people to execute the transaction. This had assisted in reducing costs significantly.

4.2.2 Introduction of self-service points on cost reduction to Kenya Commercial Bank clients

This section sought to get the opinion onto whether the introduction of self-service points reduced the cost in terms of client service to Kenya Commercial Bank clients. The results are shown on Table 4.8.

Table 4.8 Introduction of self-service points on cost reduction to Kenya Commercial Bank clients

Extent	Frequency	Percent
Strongly agree	9	18
Agree	31	62
Neutral	6	12
disagree	3	5
Strongly	1	3
Total	50	100

The researcher found out that with the opening of self-service points, the clients would be charged less than what they would be charged when transacting in the banking hall. This was also convenient for clients who wanted a faster service and did not require entering the bank. This system also saved a lot of time that would be spent queuing in the banking hall. The withdrawal hours were also made flexible since the clients could withdraw outside normal

office hours. ICT banking through the POS would take the services closer to the clients and more so service points like the ATM did not require being manned which would reduce costs significantly. Other POS systems would be held by merchants like supermarkets and clients can withdraw the money they required hence reducing costs associated with handling money like insurance and payment for cash in transit services from security companies.

4.2.3 Whether new payment systems like MPESA have lowered costs of loan repayment and savings deposits to Kenya Commercial Bank clients

This section sought to get the level of agreement in whether the adoption of the new payment systems like MPESA have lowered costs of loan repayments and saving deposits to Kenya commercial banks clients. The results are shown in Table 4.9.

Table 4.9 whether new payment systems like MPESA have lowered costs of loan repayment and savings deposits to Kenya Commercial Bank clients

Extent	Frequency	Percent
Strongly agree	3	6
Agree	18	35
Neutral	19	38
Disagree	9	18
Strongly agree	1	3
Total	50	100

The researcher found out the benefits of these new payment services was for convenience and not a cost reduction measure. However, this could reduce costs in terms of expenses incurred when the client is travelling to the bank. Though most respondents said that the payment services were for convenience, the researcher also found out that the introduction of the cash payment services through partnering with the providers would make ICT banking reduce

costs to the clients in terms of time since apart from the travel, the services were available everywhere the clients were located and also for Kenya Commercial Bank in terms of saving on costs associated with cash handling. The researcher further found out that savings deposit would be made very easy with an MPESA business number and integration with the main T24 core banking system.

4.3 Customer Service

The study sought to find out the benefits accrued to the customer service side of commercial banks due to the adoption of ICT. The findings are explained in the following section.

4.3.1 How ICT banking adoption has contributed to improvement in customer service

This section sought to establish how ICT adoption had contributed to improvement in customer service for various activities. A scale of 1-5 was used in rating advertising in relation to profitability. The scores “highly contributed” and “contributed” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{contributed} \leq 2.5$). The scores of ‘moderate’ represented in decision. This was equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{moderate} \leq 3.5$). The score of “less contributed” and “no contribution” represented strong disagreements with the statements on the advertising. This was equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{less contributed} \leq 5.0$).

The results are as shown in Table 4.10.

Table 4.10 How ICT banking adoption has contributed to improvement in customer service

	Mean	Std. Deviation
Automated Teller Machine	1.234	.77784
Electronic Funds Transfer	1.432	.77824
Telephone Banking	2.321	.77192
MICR	2.540	.91558
Smart cards	2.554	.90224
Electronic Data Interchange	3.106	9.77692
Electronic Home banking	3.390	9.73908
Electronic office banking	3.543	9.72538

The researcher found out ICT banking had improved customer service through the ATM's since they did not have to wait for long after disbursement of funds they could access the funds quickly through the ATM. An important part of customer service for financial institution is fast and efficient access to funds when they are required and this could be easily achieved through the ATM, POS services and partnering with merchants.

4.3.3 Whether internet services like Kentainer online tank ordering systems has improved customer service

This section sought to get the level of agreement in which the adoption of internet services had led to improvement of customer service in the commercial banks. The results are shown in Table 4.11.

Table 4.11 whether internet services like Kentainer online tank ordering systems has improved customer service

Extent	Frequency	Percent
Strongly agree	4	8
Agree	27	54
Neutral	18	35
Disagree	1	3
Total	50	100

The researcher found out that Internet services to this particular service provider who was the first to integrate their products with Kenya Commercial Bank had improved customer services. ICT banking would further improve the service due to the online payment for the products. This would assist in designing future products which would be paid for online through online banking systems which would improve customer service.

4.4.4 Whether electronic payment systems like real time gross settlement and electronic funds transfer systems improved customer service

This section sought to get the level of agreement in which the adoption of electronic payment systems like Real Time Gross Settlement had led to improvement of customer service in the commercial banks. The results are shown in Table 4.12.

Table 4.12 whether electronic payment systems like real time gross settlement and electronic funds transfer systems improved customer service

Extent	Frequency	Percent
Strongly disagree	1	3
Disagree	1	3
Neutral	10	20
Agree	29	58
Strongly agree	8	16
Total	50	100

The researcher found out that customer service would be improved through ICT banking with the electronic funds transfer and real time gross settlement due to the fast disbursement of funds as opposed to the cheque system. Whereby when a cheque is drawn to the client it takes time for the client to collect, and clear. With ICT banking, interfaces to the Central bank of Kenya and other banks would enable fast and quick disbursements of the funds hence improving customer service.

4.4.5 Whether services like SMS banking improved customer service to Kenya Commercial Bank clients

This section sought to get the level of agreement in which the adoption of SMS banking known as KCB connect had led to improvement of customer service in the commercial banks. The results are shown in Table 4.13.

Table 4.13 whether services like SMS banking improved customer service to Kenya Commercial Bank clients

	Frequency	Percent
Strongly disagree	1	3
Disagree	2	4
Neutral	8	15
Agree	30	60
Strongly agree	10	18
Total	50	100

Through the findings the researcher found out that SMS banking as an ICT banking technology improved customer service since the clients could access their balances from the mobile phones, they could also get a mini statement on the account activity that is, debits and credits. Though further development was needed to enable funds transfer could be made through SMS banking.

4.5 Competitive Advantage

The study sought to find out the competitive advantage derived from the adoption of ICT by the commercial banks. The results and findings are shown in the following section.

4.5.1 Whether ICT banking has influenced the organisation in increasing its competitive advantage

This section sought to get the level of extent in which the adoption of ICT had led to increased competitive advantage in Kenya commercial banks. The results are shown in Table 4.14.

Table 4.14 whether ICT banking has influenced the organization in increasing its competitive advantage

Extent	Frequency	Percent
Strongly increased	13	25
Increased	31	63
Neutral	5	10
Decreased	1	2
Total	50	100

The researcher found out that with the adoption of ICT banking, the organization could enhance customer service thus ensuring it was at par with its competitors. This showed that there was a need to adopt ICT banking in order to increase competitive advantage.

4.5.2 Rating the role of ICT techniques in helping Kenya Commercial Bank gain competitive advantage

This Section is a likert scale that rated the role of ICT techniques in helping Kenya Commercial Bank gain competitive advantage. The results were as shown below.

A scale of 1-5 was used in rating advertising in relation to profitability. The scores “very high” and “high” were represented by mean score, equivalent to 1 to 2.5 on the continuous

Likert scale ($1 \leq \text{high} \leq 2.5$). The scores of ‘moderate’ represented in decision. This was equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{moderate} \leq 3.5$). The score of “low” and “very low” represented strong disagreements with the statements on the advertising. This was equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{low} \leq 5.0$).

Table 4.15 rating the role of ICT banking techniques in helping Kenya Commercial Bank gain competitive advantage

	N	Minimum	Maximum	Mean	Std. Deviation
Automated Teller Machine	50	1.00	4.00	2.4606	0.77692
Telephone Banking	50	1.00	5.00	2.8700	0.73908
Electronic Funds Transfer	50	1.00	5.00	3.0700	1.02538
Electronic Data Interchange	50	1.00	5.00	3.1300	1.19875
Smart Cards	50	1.00	4.00	4.2000	1.27775
MICR	50	1.00	5.00	4.2000	1.30931
Electronic Home banking	50	1.00	5.00	4.5000	.99488
Electronic office banking	50	1.00	4.00	4.6000	1.28965

From the Table 4.15, ATM was rated highly in helping the organization achieve competitive advantage. This was represented by a mean of 2.4606. On the other end, electronic home banking (4.5) and Electronic office banking (4.6) were rated as low in contributing to the competitive advantage.

The researcher through the findings found out that ICT banking would not create sustainable competitive to create sustainable advantage, continuous innovation was required.

4.5.3. Rating the role of ICT banking in proper forecasting in the organisation.

This section sought to get the level of rate at which the adoption of ICT had led to proper forecasting and increased competitive advantage in Kenya commercial banks. The results are shown in Table 4.16.

Table 4.16 Rating the role of ICT banking in proper forecasting in the organization

Extent	Frequency	Percent
Very high	11	22
High	27	54
Neutral	7	15
Low	3	5
Very low	2	4
Total	50	100

The researcher found out, that with the adoption of ICT banking and the real time online nature accurate patterns could be established which would assist in accurate forecasting since, activities like seasonality for farmers could be established. Spending and borrowing patterns can be seen which will highly assist in forecasting in the organisation.

4.5.4 Rating of the importance of ICT banking adoption in gaining competitive

This Section is a likert scale that rated the importance of ICT adoption in gaining competitive. The results were as shown below.

A scale of 1-5 was used in rating advertising in relation to profitability. The scores “very important” and “important” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{important} \leq 2.5$). The scores of ‘moderate’ represented in decision. This was equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{moderate} \leq 3.5$). The

score of “unimportant” and “very unimportant” represented strong disagreements with the statements on the advertising. This was equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{unimportant} \leq 5.0$).

Table 4.17 Rating of the importance of ICT banking adoption in gaining competitive

	N	Min	Max	Mean	Std. Deviation
Bankers Automated Clearing Services		1	5	2.50	1.447
Automated Delivery Channels:		1	5	2.78	1.385
Real Time Gross and Settlement system (RTGS)		1	5	2.92	1.360
Automated Payment Systems		1	5	3.38	1.263
Kenya Electronic Payment and Settlement system (KEPSS)		1	5	3.78	.991

The researcher found out that with ICT banking it would be important for the institution to be in the clearing house in the future so that it did not have to use other banks to represent it in the clearing house.

5.2.3 Cost Reduction

The study established that ICT banking had led to cost reduction in terms of service delivery to Kenya Commercial Bank clients.

This finding is in line with that of Brynjolfsson and Hitt (2000), who said that ICT has the capacity to cut costs of coordination, communication and information processing and many businesses had taken advantage of this. In addition, Schmitz (1978), anticipated that highly-

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

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

The following are the subsections that guided the study;

5.2 Summary of the findings

5.2.1 Operational Efficiency

From the study, it was evident that ICT banking adoption had led to the improvement of operational efficiency in the microfinance institutions. This finding is in line with Comunale (2004) who argues that ICT banking has increased efficiency and reduced information costs, although it is 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. In many cases efficiency and quality can be realized by taking an alternative approach driven by innovative ways of working. ICT is key to innovation and as an integral part of the business, offers new opportunities that not only drive efficiencies but can also contribute to improved service delivery.

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The study established that ICT banking had led to cost reduction in terms of service delivery to Kenya Commercial Bank clients.

This finding is in line with that of Brynjolfsson and Hitt (2000), who said that ICT has the capacity to cut costs of coordination, communication and information processing and many businesses had taken advantage of this. In addition, Schultz (1975), anticipated that highly-

educated workers are likely to be best-equipped to respond to the new product development opportunities made possible by ICTs. In addition, Moodley (2002) observes that ICT can also reduce inefficiencies resulting from lack of co-ordination between firms in the value chain. Internet-based B2B interaction and real-time communication can reduce information asymmetries between buyers and suppliers and build closer relationships among trading partners. In fact, adopters of e-commerce tend to reduce transaction costs, increase transaction speed and reliability, and extract maximum value from transactions in their value chains.

5.2.3 Customer Service

The study established that the use of Automated Teller Machine contributed highly to customer service. This is in line with Irechukwu (2000) who lists some banking services that have been revolutionized through the use of ICT as including account opening, customer account mandate, and transaction processing and recording. He adds that Information and Communication Technology has provided self-service facilities (automated customer service machines) from where prospective customers can complete their account opening documents direct online. It assists customers to validate their account numbers and receive instruction on when and how to receive their cheque books, credit and debit cards.

In addition, Robert E. 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:... ATMs offer consumers the convenience of banking in many more locations than ever before. Indeed, ATMs far outnumber brick-and-mortar banks, in large part because they are cheaper to operate than a bank branch. Today, nearly 200,000, ATMs are found throughout the country, more than the collective number of branches of banks, thrifts, and credit unions.

Maria Gloria Cobaset al. (2001) have generalized some of the driving forces behind bank's decisions to install ATMs in the United States. According to the authors: ...in the early 1970s, when rising inflation and interest rates made it more difficult for consumers to borrow,

reduced consumer's loyalty to their local banks. These changes in economic conditions and consumer attitudes stimulated competition among financial institutions. For banks that could afford the investment," ATMs represented an attractive strategy through which to distinguish them and achieve a competitive market advantage."....In the second half of the 1970s, more institutions began to install ATMs to enhance customer service and as a defensive measure against competition from other banks. Cost savings to banks were not a driving factor. Consumers used ATMs to access their accounts more frequently, so that the overall number of transactions increased. In the 1980s, other factors began to influence ATM installations. Because construction and operation of brick and mortar branches became increasingly expensive, some banks limited branch expansion or closed branches. ATMs provided a partial substitute for those lost branches.

5.2.4 Competitive advantage

The study evidently established that ICT banking adoption had increased the organizations 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 ICTs and advantage (in and Lin(2006) Melville, Kraemer, and Gurbaxani (2004); Menon, Lee, & Eldenburg, (2000) Porter and Millar, 1998), that is, ICTs have value to organisational advantage.

According to Tan *et al* (2009), with the strong waves of globalization and liberalization across the world, ICT is believed to be the most cost-efficient tool to help companies gain bigger markets and the ability to compete with larger organizations in attracting customers to their products, services and information.

5.3 Discussion

The purpose of this research is to determine the factors influencing the adoption of ICT banking in commercial banks in Kenya. The study found out that ICT banking led to

improvement of operational efficiency but still remains an underutilised resource in many organisations.

ICT banking also led to cost reduction, increased transaction speeds and reliability, and extracted maximum value from transactions in their value chains.

Customer service was also affected with convenience, and the self service capability of ICT banking being a major benefit. Competitive advantage was also listed as a major benefit derived from the adoption of ICT banking.

5.4 Conclusion

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

That operational efficiency influences to a great extent the adoption of ICT banking at Kenya Commercial Bank. This is because of the ease in account opening, validation of customers' account numbers, cheque books, and debit cards requisition. Also withdrawals had become easy through ATM provision, reduction of time spent in the banking halls either when withdrawing or depositing, faster loan processing and faster statement requisition. This finding is in line with Comunale (2004) who argues that ICT banking has increased efficiency and reduced information costs, although it is still remains an under-utilized resource). In addition, Woherem (2000) adds that operational efficiency isn't just about making cuts.

Secondly, the researcher concludes that cost cutting is a major factor that influences adoption of information and communications technology banking at Kenya Commercial Bank. The need to maintain low operational costs is a primary objective of the MFI. Further, with the adoption of ICT banking, Kenya Commercial Bank is banking on reduced operational cost. Brynjolfsson and Hitt (2000) said that ICT has the capacity to cut costs of coordination,

communication and information processing and many businesses had taken advantage of this. In addition, Schultz (1975) anticipated that highly-educated workers are likely to be best-equipped to respond to the new product development opportunities made possible by ICTs.

Thirdly, ICT banking adoption has a direct impact on customer service. This is evident through the use of ATM's 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.

Fourthly, competitive advantage influences to a great extent the adoption of ICT banking at Kenya Commercial Bank. This has been through proper forecasting and also placing the bank in level with other players in the financial sector. This finding is in relation to many studies available in current literature which shows that there is growing support for the positive relationship between ICTs and advantage (in & Lin(2006) Melville, Kraemer, &Gurbaxani (2004); Menon, Lee, &Eldenburg, (2000) Porter & Millar, 1998), that is, ICTs have value to organisational advantage

5.5 Recommendations

The following recommendations were made based on findings and conclusions of the research study.

5.5.1: Recommendations for Improvement

The following are recommendations for improvement:

First, 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 applications in their operations. Donors

and the governments must promote awareness campaigns on the benefits associated with ICT banking for the success of banks.

Secondly, 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 for 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 the Kenya Commercial Bank. The increase in the number of qualified people in ICT banking will influence the labour costs.

Thirdly, Kenya Commercial Bank should invest in relevant technologies after thorough and careful assessment of their requirements. The requirement should be addressed in perspective of current needs and future plans.

Fourthly, Kenya Commercial Bank can get maximum benefit by investing in technology, and putting in a better ICT banking solutions that works for them.

Fifth, Progressive policies that make ICT banking accessible and affordable to the majority of the population is important for encouraging the use of ICT banking within microfinance and for the development of the microfinance sector.

5.5.2: Recommendations for Future Research

Further research is necessary as the findings were based on a relatively 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 other banks.

The descriptive analysis that was used is always not sufficient to draw conclusions on a phenomenon, and to provide adequate information that can be used for policy development. Further research focusing on inferential analysis is necessary to study the relationships between ICT and banks, 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.

5.6 Summary

The study found out that the factors banks derived operational efficiency, cost reduction, customer service and competitive advantage from the adoption of ICT banking. Therefore these are the factors influencing the adoption of ICT led banking by commercial banks in Kenya.

The study recommended that the Government and donors must be encouraged to support the software development activities, banks should have the capacity to manage the technologies through personnel, Kenya Commercial Bank can get maximum benefit by investing in technology and putting in a better ICT banking solutions that works for them and that Progressive policies that make ICT banking accessible and affordable to the majority of the population is important for encouraging the use of ICT banking within microfinance and for the development of the microfinance sector.

Recommendations for further research were also made due to the sample size and the case study of one commercial bank and not a survey of all commercial banks in Kenya.

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APPENDICES

Appendix I: Letter of Introduction

University of Nairobi

College of education and External Studies

P.O BOX 92,

Kikuyu.

May 2011

Dear Respondent,

RE: REQUEST TO COLLECT SURVEY DATA FOR MA IN PROJECT PLANNING AND MANAGEMENT

I am a student at the University of Nairobi, pursuing Masters of Arts in Project Planning Management program.

In order to fulfil the master's program requirements, I am undertaking a research project on **FACTORS INFLUENCING ADOPTION OF INFORMATION COMMUNICATION TECHNOLOGY BANKING IN COMMERCIAL BANKS IN KENYA: A CASE STUDY OF KENYA COMMERCIAL BANK, KENCOM HOUSE BRANCH, NAIROBI COUNTY, KENYA**. Your department has been selected to form part of this study. Therefore, I kindly request you to assist me to collect data by filling out the accompanying questionnaire and use of any other relevant document that could give important information for this study.

The information provided will be used exclusively for academic purposes and will be held in strict confidence. Thank you.

Yours faithfully,

Leah Chepchirchir Choge

Appendix II: Research Questionnaire

Please fill in the following questionnaire.

SECTION A: PERSONAL INFORMATION

1. What is your gender?

Male

Female

2. What is your highest level of education?

Post graduate

Graduate

Certificate/Diploma

3. Do you have any professional qualifications in ICT or Banking?

Yes

No

Please specify.....

4. How long have you been working in the organization?

Less than six months

Less than one year

Less than three years

Less than five years

Less than seven years

More than seven years

SECTION B: ICT and Operational efficiency

5. Would you agree that the adoption of ICT is very important in the improvement of operational efficiency of Institutions?

- Strongly Agree Agree Neither Agree or Disagree Disagree Strongly Disagree

Please give reasons for your answer

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6. How would you rate the importance of adoption ICT in the improvement of operational efficiency in the organisation?

- Very high high moderate low Very low

Please explain your answer

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7. To what extent has ICT improved the quality and quantity of information for operations to ease decision making?

- Very great extent Great extent Moderate extent low extent Very low extent

Please explain your answer

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8. Would you agree that the implementation of the new T24 core banking software has improved operational efficiency?

Strongly Agree Agree Neither Agree or Disagree Disagree Strongly Disagree

Please explain

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9. Do you agree that banking institutions are adopting ICT to improve their operations?

Strongly Agree Agree Neither Agree or Disagree Disagree Strongly Disagree

Please explain

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10. How would you rate the adoption of the following ICT's in carrying out business activities?

	Very high	High	Moderate	Low	Negligible
Automated Teller Machine					
Smart Cards,					
Telephone Banking					
	Very high	High	Moderate	Low	Negligible
MICR					
Electronic Funds Transfer					
Electronic Data Interchange					
Electronic Home banking					
Electronic office banking					

Section C: Cost Reduction

11. In your opinion has the adoption of ICT improved cost reduction at Kenya Commercial Bank in terms of service delivery to the customers?

- Strongly Agree
 Agree
 Neither Agree nor Disagree
 Disagree
 Strongly Disagree

Please explain

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12. Do you agree that introduction of self-service points can reduce the cost of service delivery to Kenya Commercial Bank customers?

Strongly Agree Agree Neither Agree or Disagree Disagree Strongly Disagree

Please explain

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13. In your opinion have new payment systems like MPESA systems lowered costs of loan repayment and savings deposits to Kenya Commercial Bank customers?

Strongly Agree Agree Neither Agree or Disagree Disagree Strongly Disagree

Please explain

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Section D: Customer Service

14. In your opinion, how has the adoption of ICT contributed to improvement in customer service the following areas?

	Very Positively	Positively	Neither Positively nor negatively	Negatively	Very negatively
Automated Teller Machine					
Smart Cards,					
Telephone Banking					
MICR					
Electronic Funds Transfer					
	Very Positively	Positively	Neither Positively nor negatively	Negatively	Very negatively
Electronic Data Interchange					
Electronic Home banking					
Electronic office banking					

15. In your opinion have new payment systems like MPESA systems improved customer service to Kenya Commercial Bank customers?

Strongly Agree Agree Neither Agree or Disagree Disagree Strongly Disagree

Please explain your answer

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16. In your opinion have internet services like Kentainer online tank ordering systems improved customer service?

- Strongly Agree Agree Neither Agree or Disagree Disagree Strongly Disagree

Please explain your answer

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17. Do you think electronic payment systems like real time gross settlement and electronic funds transfer systems improve customer service?

- Strongly Agree Agree Neither Agree nor Disagree Disagree Strongly Disagree

Please explain

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18. Do you agree services like SMS banking will improve customer service to Kenya Commercial Bank customers?

- Strongly Agree Agree Neither Agree nor Disagree Disagree Strongly Disagree

Please explain your answer

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19. Does Kenya Commercial Bank have a way of getting honest feedback from its customers?

Yes No

20. If yes above, how do Kenya Commercial Bank customers rate service delivery?

Very low

Low

Moderate

High

Very high

21. If no above, what are the measures in place to track customer satisfaction with ICT banking?

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Section E: Competitive Advantage

22. In your opinion, how has ICT influenced your organisation in increasing its competitive advantage?

- Strongly Increased
 Increased
 Neither increased nor decreased
 Decreased
 Strongly Decreased

Please explain your answer

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23. How would you rate the role of the following ICT techniques in helping Kenya Commercial Bank gain competitive advantage?

	Very high	High	Moderate	Low	Very low
Automated Teller Machine					
Smart Cards,					
Telephone Banking					
MICR					
Electronic Funds Transfer					
Electronic Data Interchange					
Electronic Home banking					
Electronic office banking					

24. In your opinion, how would you rate the role of ICT in proper forecasting in your organisation?

Very high High neither low nor high Low Very Low

Please explain your answer

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25. How would you rate the importance of ICT adoption in gaining competitive advantage in the following areas?

	Very Important	Important	Neither Important nor unimportant	Unimportant	Very unimportant
Bankers Automated Clearing Services					
Automated Payment Systems					
Automated Delivery Channels:					
Kenya Electronic Payment and Settlement system (KEPSS)					
Real Time Gross and Settlement system (RTGS)					