THE BUSINESS VALUE OF INFORMATION COMMUNICATION TECHNOLOGIES IN THE FINANCIAL DEPARTMENTS OF COMMERCIAL BANKS IN KENYA

BY:

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A Management Research Project Submitted in Fulfillment of the Requirements for the Award of the Degree of Master of Business and Administration (MBA), School of Business, University of Nairobi Business

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DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university other than the University of Nairobi for academic credit.

Signed: ______________ **Date:** 15/11/2010

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D61/71737/2008

This project has been presented for examination with my approval as the appointed supervisor.

Signed: ______________ **Date:** 16.11.2010

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ABSTRACT

There began to appear theoretical arguments regarding the role of information technology (IT) in creating the value chain at firms and this opened up new lines of inquiry (Porter and Millar. 1985). This study was a survey on the business value of information communication technologies in the financial departments of commercial banks in Kenya. The collected data has been analyzed interpreted in line with the aim of the study namely: to delineate the extent to which various facets of information communications technology (ICT) are used by the commercial banks in Kenya; and secondly. to investigate the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at their finance departments. Data was collected from a population that comprised of forty-four commercial banks incorporated and. or licensed to operate in Kenya by 2007. This gave a response rate of seventy one (70.8%) percent.

Based on the results from data analysis and findings of the research. based on the objective of the study; firstly. it was found that the three key functions that are performed by finance departments of commercial banks are to perform or give short-term banking forecasts. at least monthly; to exercise day-to-day control of banking positions and lastly to cover the interest-rate risk. Secondly. it was found that the two commonly used technological tools in cash management in the finance department are the financial software and e-banking. Thirdly. the five key economic benefits of the information communications technology and innovations that have accrued to the commercial banks in Kenya at their finance departments include: ICT use has ensured proper management of account balances at value dates; ICT has helped in the monitoring and optimization of the sales-cash circuit; ICT has led to system responsiveness to changing user needs; and ICT has helped in the coverage of exchange-rate risk. Only eight (8) components/ factors were extracted in factor analysis on the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at the finance departments.

Some eight economic benefits that have not been realized by the financial department need to be addressed within the commercial banks in Kenya. especially flexibility to produce professional reports like graphics and desktop publishing. Areas of further research that were identified include a similar study to be carried out to determine how the relationship between ICT planning intensity and financial performance. and benefits if any be quantified by the organizations. The greatest hurdles while conducting the study were time. literature availability and irrelevancy.

DEDICATION

To My Parents,

Thank You for Taking Me to School the First Day

To My Husband, Obara

Thank You for Your Love

My Immediate In-laws

Your are such Wonderful pals and an Investment to Look at!

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It would have not been possible for me to write this research project if it were not for the support. encouragement and guidance of many people. Although it is not possible to name all of them. some few key people and institutions need to be acknowledged for their professional generosity and input. considering the time this research project has taken to come to fruition.

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Without hesitating to commend my family which supported me both financially, morally and encouragement to go through the rough long way of coming up with the result of the study. To nuclear family and close friends who have given me both intellectual and emotional support I offer my up most gratitude. I have drawn strength from my lovely husband Obara's interest in my studies, especially this project and his belief in me to complete it. I also cannot forget my colleagues Judy, Kepha, and Bosire for their friendly support and encouragement towards this study.

Lastly, I wish to acknowledge the Commercial banks operating in Kenya and all those other people who graciously gave their time to be interviewed/fill the research instrument.

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LIST OF ABBREVIATIONS

ICT: .... Information Communication Technology
IT: .... Information Technology
ATM: .... Automatic Teller Machine

CHAPTER ONE: INTRODUCTION

1.1 Background

The recent developments in the Information Communication Technology (ICT) have been received with great interest in research and practice by the banking community the world over. Communication has become faster, cheaper, easier, efficient and more effective in all sectors both public and private. The recent developments can affect the current methods of doing banking business in Kenya (Magutu et al., 2009).

It is worth noting that banking business has changed from paper and branch banks to digitized and networked banking services. The internal accounting and management systems of banks have already changed. It is now fundamentally changing the delivery systems banks use to interact with their customers (Magutu et al., 2009). All over the world, banks are aiming to find a technological solution to meet the challenges of today's dynamic business environment. It is clear that the internet and other related technologies and applications are changing the banking industry. Banks with the ability to invest and integrate information technology are therefore bound to dominate the highly competitive global market. Investing in ICT is thus critical. Its potential and consequences on the banking industry future is enormous, especially with *m*-Banking.

Mobile telephone communication providers inaugurated and support mobile financial services ranging from personal account monitoring to mobile banking and money transfers: *m*-Banking. Other products include payments of utility bills like electricity and water. The commercial banks have further embraced the Visa service feature in their debit and credit cards; enabling customers to carry out transactions over the internet. Magutu et al (2009) assert that Kenya has achieved significant success in the implementation of electronic banking; it is on the top of the emerging markets in this area and even outpaces the achievements of some developed countries.

1.1.1 The Facets of ICT in the Banking Industry

According to Leire *et al.*, (2009) ICT includes financial software, e-banking, and the Internet and is considered one of the most common means of increasing revenue, achieving economies of scale, and reducing unit costs. ICT also enables larger volumes of up-to-date information to be readily obtained (Vasarhelyi and Greenstein, 2003) and it facilitates efficient management of treasury positions (Shon and Swatman, 1998). It also improves financial forecasts and planning; optimizes financing and investment of treasury deficits and surpluses; identifies financial risks that can then be monitored or hedged rapidly and systematically; and allows simulations to compare contracting of different hedging products (Loderer and Pichler, 2000).

Leire *et al.*, (2009) further examined the relationships within financial departments of firms with respect to their use of ICT in cash management, perceptions of the importance of cash management to unit performance, and perceptions of ICT's usefulness to this performance. They developed and tested an explanatory model of factors explaining the perceived importance of ICT to the performance of financial departments of organizations. Cash management entails: liquidity management, banking management, management of treasury deficit financing and investment of treasury surpluses, and management of financial risks. As a management tool, ICT is used in all operations involving financial decision making. Use of ICT within the financial department of a firm typically incorporates an information and communication process that draws on many technological tools (financial software, e-banking, and the Internet).

1.1.2 The Financial Department Business Value of ICT

According to Leire *et al.*, (2009) the business value of ICT in the banking industry especially the finance department focuses on three indicators of commercial bank performance: cost savings, improvements in the quality of the information, and enhancements in the use of scenario simulations for decision making.

In Leire *et al.*, (2009) assessment of the performance of an organization's finance department, they used three indicators important to treasury managers: cost savings, improvements in information quality, and enhancements in the use of scenario simulations in decision making. This study uniquely contributed to the debate about ICT "pays offs" and the growing number of studies that report ICT impact across various measures and levels (Brynjolfsson and Hitt, 2000) in that it examines ICT's perceived impact on productivity at the departmental level—that of the finance department. Moreover, they provided and tested an explanatory model of this influence.

Information Communication Technology (ICT) has seen developments that have been specifically geared towards to customer satisfaction, growth of business for the bank and the employee all for the purpose of lessening the cost of doing business and raising profits. Presently, the banking sector in Kenya has grown to be more sophisticated and the focus has turned to the business process management and the quality of service offered to the customers (Magutu et al.. 2009). The sector has essentially metamorphosed from manual paper work in the banking halls: long lines at the tellers' cabins; and large sums in cash out of the banks and back into the banks to Automated Teller Machines (ATM). plastic money. electronic transactions involving transfers of large sums of money from via Remote Banking (one of the most important modern banking services enabling the customer to make payments from any place in the world and at any time via a Personal Computer (PC), fixed or mobile phone while assured of security of the transaction over the internet (www.swedbank.lv). This has been referred to as *e*-Business or *e*-commerce by various researchers. The significance of *e*-commerce in economic development the world over cannot be gainsaid. ICT has greatly lessened the cost of doing business and spurred profits for investments. This in turn has led to increased Direct Foreign Investments (DFIs) especially in the developing economies, Kenya included.

Of late. the latest drive towards innovation has motivated the industry into looking towards IT and *e*commerce as a vital tool for simplifying the complexity of the banking process (Magutu et al.. 2009). Among the benefits of these developments is massive cost cutting measures that has seen shoring up of profits for the sector. In equal measure. the sector has witnessed untold fraud perpetuated by techno-savvy entrepreneurs that has led to losses to private individuals, investments and even government agencies. This is not only a problem in Kenya but the world over. However. this study will focus on these implications and others within the Kenyan market.

1.1.3 The Banking Industry In Kenya

In Kenya, banking business is currently regulated by the Banking Act, Cap. 488 of 1989. This Act repealed and replaced the Banking Act of 1969. Prior to this, the sector was regulated under the Banking Ordinance, a colonial piece of legislation. inherited by the government at independence. The act gave the Minister for Finance responsibility of licensing banks and non-bank financial institutions and to the Central Bank of Kenya the responsibility of inspecting all financial institutions. This Act however, had a lot of legislative deficiencies. The Banking (Amendment) Act, 1985 attempted to rectify these deficiencies. Licensing was henceforth to be routed through the Central Bank of Kenya with the Minister's approval (www.cbk.co.ke). There is a Deposit Protection Fund (DPF) in place since 1986 to guarantee depositors' money is not entirely lost in case a bank goes under.

The Central Bank of Kenya (CBK) has the responsibility to facilitate the achievement of a stable financial sector. It has issued revised Prudential Guidelines and Risk Management Guidelines. The revisions were needed to strengthen the regulatory framework for the Banking Sector. The Central Bank is of course acutely aware of a few challenges in the implementation of the Guidelines but consultations are on course with the Kenya Bankers Association (KBA) to find ways of alleviating some of the challenges. The Central Bank intends to review the Banking Act and Building Societies Act. These legislations have not kept pace with developments both in the global arena and the Kenyan Banking sector. The CBK intends to revamp both legislations through a consultative process. The other issue of interest to the Central Bank to the Kenyan commercial banks is how best to promote access to the financial system by a wider segment of the Kenyan populace (www.cbk.co.ke).

Commercial banks' expansionary strategy targets Small and Medium Enterprises (SME's). The SME sector is critical to Kenya's economic growth but has not been able to easily access credit from commercial banks. Commercial banks are urged to venture into this unexplored territory focusing on the ultimate benefits of poverty reduction and employment creation through the SME sector. Kenya's financial system is one of the most developed in sub-Saharan Africa but is subject to considerable government influence and inadequate supervision (www.cbk.co.ke).

As already noted above. the Kenyan financial sector is one thriving sector that has been at the forefront of the country's economic development and indeed regionally. The sector has grown to be more sophisticated boasts some of the most complex and robust financial services providers that comprise at least forty seven (47) licensed Commercial Banks, a myriad of Micro-Finance Institutions, numerous Forex Bureaux. Co-operative Saccos and a variety of ad hoc institutions like Pyramid schemes. At the end of 2005, the banking sector included two mortgage financial companies. two building societies, a large number of savings and credit cooperatives, and 41 commercial banks. The six largest banks, including two majority state-owned banks and two foreign banks. control about two-thirds of banking assets. The government also owns or owns shares in several other domestic financial institutions and influences the allocation of credit. Non-performing loans, particularly from state-owned banks to state-owned enterprises, remain a problem. There were 39 insurance companies in 2005, but the sector was highly concentrated with four companies accounting for 75 percent of premiums. Capital markets are relatively small and focused on the stock exchange. Foreign investors may acquire shares in the stock market, subject to specified limits. A latest development that is bound to push the complexity of the sector is the landing of the under-sea Fibre Optic Cable (FOC) (www.cbk.co.ke).

The six largest banks, including two majority state-owned banks and two foreign banks are Akiba Bank, Barclays Bank Kenya, Guardian Bank Limited, Kenya Commercial Bank Group, Stanbic Bank Kenya Limited and Standard Chartered. Without Akiba Bank, the remaining five largest banks are known as the Big Five commercial banks in Kenya (www.cbk.co.ke).

1.2 Statement of the Problem

An interest in analyzing changes from ICT dates back to Galbraith's (1973) study of the role of information in organizations. In the initial stages, studies of ICT use in firms were descriptive with findings focused on improvements that technology brings to the various information and management systems of companies, including: external and internal logistics and mechanization processes (Davenport and Short, 1990; Mulligan and Gordon, 2002), marketing operations, human resource management (Rayport and Sviokla, 1995), and information and management processes (Vasarhelyi and Greenstein, 2003).

There began to appear theoretical arguments regarding the role of information technology (IT) in creating the value chain at firms and this opened up new lines of inquiry (Porter and Millar, 1985). Instead of viewing business as a collection of independent, specialized functions, the value chain approach views business as a series of activities that create value. The value chain recognizes IT as a critical component because IT provides necessary linkages among the disparate value chain activities that require coordination. The relationship between IT investment and productivity has been a source of debate.

In Kenya specifically, developments in IT has developed in leaps and bounds; from *e*-Banking to *m*-Banking with. Just before *m*-Banking, a number of commercial banks allowed their customers to monitor their accounts over the internet: *e*-Banking. Some of the key aspects associated with *e*-commerce on banks business process management are retail transfer *e*-payments (ATM transactions, card-based *e*-money and cash withdrawals); there is use of electronic ID; security of operations has been enhanced. internet has been enhanced. there has been improved management of retail *e*-payments (credit and debit cards); electronic signatures are now stored and can be shared, with a lot of mobile applications. There is an increased wholesaler's *e*-payment (large value transfer systems. automatic clearing and credit transfers). There is also electronic document management. electronic registration process for customers. *e*-procurement and certification for security of payment (www.cbk.co.ke). There is need for a research to delineate the extent to which various facets of ICT are used and perceived as useful to commercial banks in Kenya at departmental level.

The impact of ICT on productivity was originally researched at the economic. industrial. and national level (Goss. 2001; Stiroh. 2002). Scholars have also addressed the productivity question at the organizational level (Brynjolfsson and Hitt. 2000: Chan. 2000; Nájera, 2005). One of the local surveys by Gichuhi. (2009). on the value of ICT in the banking industry in Kenya did not address commercial banks and the narrow perspective of finance department.

Although a number of studies have been done. there is no evidence of the business value or usefulness of ICT at departmental level in commercial banks. particularly in Kenya. ICT helps organizations by providing information that is critical to making and evaluating decisions. ICT is used intensively in financial departments because it facilitates management of treasury. optimizes short-term decisions of financing and investment, and facilitates identification of financial risks. There is little to no supporting research of its value at this level, an issue which this study intends to address. Accordingly, it is important to assess and explain the perceived usefulness of ICT in cash management. which is the focal activity of the financial department of commercial banks in Kenya.

This study therefore sought to delineate the business value of the rapid developments in information communications technology and innovations used by commercial banks in Kenya at their finance departments.

1.3 Objectives of the Study

The main objective of the research was to investigate the business value of the rapid developments of information communication technologies in the financial departments of commercial banks in Kenya.

Specific objectives were:

i. To delineate the extent to which various facets of information communications technology (ICT) are used by the commercial banks in Kenya

ii. To investigate the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at their finance departments.

1.4 Justification of the Research

In recognizing the significance of ICT in economic stability and growth of a country. it should not be lost on the consumers of the technologies that risks abound in every opportunity. It has also been noted that the pace of legislating the sector much of the time is overtaken by technological advancements that are directly linked to the banking sector. The research findings and recommendations are therefore expected to assist in building into the ICT and business value at departmental level. as a body of knowledge.

1.5 Significance of the Study

Findings from this study will benefit the following groups:

i. The Commercial Banks in Kenya

The findings of this study will help the leading commercial banks managers in Kenya and other decision – makers with an insight into the usefulness of ICT to the commercial banks. where ICT is used at finance departmental level. The study intends to investigate the business value of the rapid developments of information communication technologies in the financial departments of commercial banks in Kenya.

ii. Academics / researchers

Findings from this research will assist academicians in broadening of their syllabus with respect the business value of the rapid developments of information communication technologies in the commercial banks. hence providing a deeper understanding. The findings may as well attract other researchers to venture into business value of the rapid developments of information communication technologies that have not been studied in the African context. The available literature is full of case studies from the west. which as pointed out by Aosa (1992). cannot be replicated without amendments for organizations operating in Africa.

iii. Government

The government can use the findings for their research to assist in policy formulation and development of a framework for the rapid developments of information communication technologies in its banking sector: this study might also help in pointing out areas in which the banking sector especially the commercial banks can develop competencies and capabilities leading to superior performance with respect to the rapid developments of information communication technologies. It is also hoped that this study will help in recognizing local economic constraints in the finance sector.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The IT industry has grown exponentially in a push-pull fashion over recent years. On one hand, demand is being placed on businesses to operate and compete in the global marketplace, for vast opportunities created by the increase of Information systems in the business place. On the other hand, the continual advances in IS technologies, both in hardware and software, are often seen to be forcing businesses to modify the way they do business in order to accommodate the new technology to implement. The problem that many businesses face, after having made the decision to implement a new Information System, is subsequently deciding the optimum level of technology for them. Today's marketplace is intensely competitive and information delivery is so critical to successful business operations and management (Teo and Too, 2000). However, it is not just the information alone that is important, it is the effective and timely processing of information that enables a business to increase its value.

Venkatesh, (2000) identified that information is necessary for many different functions of an organization including "day-to-day operations, planning, controlling, organizing and decision-making". The use of computers in managing information has brought about the area of 'Information Systems' and it is stated by Venkatesh, (2000) that this is "concerned not only with the development of new information technologies but also with questions such as: how they can best be applied, how they should be managed, and what their wider implications are". The word 'system' is a commonly used term and can be associated with "almost every conceivable field of activity". Research has made it clear that assumptions are made about people's understanding of the term.

OECD (2004) defined a system as "a group of elements, either physical or nonphysical in nature, that exhibit a set of interrelations among themselves and interact together toward one or more goals, objectives, or ends." There is much debate about what constitutes an Information System (IS) however, the author feels it has been appropriately defined by OECD (2004) who referred it as "a group of interrelated components that work collectively to carry out input, processing, output, storage and control actions in order to convert data into information products that can be used to support forecasting. planning. control. coordination. decision making and operational activities in an organization."

It is suggested by Oliner and Sichel. (2000) that Information Systems do not need to be computer based. Computers may not be needed in a manual system that consists of people and procedures that can perform tasks effectively and efficiently without producing errors. computers may only be introduced if it is seen that the introduction will improve the current system. For the purpose of this study. the term Information System (IS) will be used with regards to systems that are computer based.

2.2 Technology and Innovations in the Banking Industry

Technology in banks originally was meant to reduce costs and to enhance different functions. but the biggest dilemma, however. is to how to maintain a satisfactory number of face-to-face interactions with the customers (Smith, 1987).

According to Koh et al.. (2007) the five key practical achievements of technological developments in any financial institution are the removal of repetitive. time consuming tasks, reduction in human error and extended access to banking related facilities. This is celebrated in the provision of customer information that it would be much more expensive to provide on a person-to-person basis. The terms personal computer (PC) banking. Internet banking, virtual banking, online banking, home banking. remote electronic banking. and phone banking are used to describe the various types of electronic banking are often used interchangeably (Zeithaml, 2000).

2.2.1 Banking Software

Continuous software improvements in the information technology have enabled banks to provide their services in a more direct manner to adjust their products better to the clienteles' needs. Although banking has always been an information business. until now information technology was mainly used to automate administrative processes. The shift from automating to informating-using information and its flow to inform managers provides opportunities to track a customer's behavior and respond at the right time. By making effective use of these opportunities, banks are able to transfer a great deal of transactions from branch offices to a callcentre (Yang and Fang. 2004). Accessibility has been extended through technological developments as well as the introduction of new service delivery methods that allow consumers to do business with service firms from the home and office.

The five characteristics or attributes of innovations that affect the rate at which innovations are adopted (and ultimately their usage patterns) are: their relative advantage. compatibility. complexity. divisibility (trialability). and communicability (observability) (Zairi. 2003). Additional characteristics were later added: perceived risk (Zhang. 2000) and financial and social cost (Zeithaml. 2002).

2.2.1 Electronic Banking

The facilitation of non-cash transactions, which would have required a visit to a branch according to Koh et al.. (2007) is seen telephone banking, while electronic banking is the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution.

According to Zhang and Prybutok. (2005) electronic banking technology is a set of instructions and procedure designed to respond to situations and process cases to achieve the results specified in the mandate of the agency. This is therefore an aspect of the design of process for transforming materials to finished products. It does not refer to machines and equipment only. Utilization of technology today, offers dramatic and enduring improvements in enhacing organizational performance (Port. 1993).

2.2.2 Internet Banking

According to Dabholkar. (1994) internet banking allows customers to perform tasks at a time and in a place convenient to them. Direct contact with such technology also gives customers a feeling of greater control. Internet banking is predicted to transform and revolutionalize traditional banking industry (Leire et al, 2009). Banking services are easily digitalized and automated and. thus, from an operational perspective, lend themselves to the internet (Adrienne et al.. 2003) the potential competitive advantage of the internet for banks lies in the areas of cost reduction and satisfaction of consumer needs.

Dabholkar (1994) stipulates that there should be flexibility in the design of the technology to allow customers to make changes during the transaction and make available a customer service adviser if required. with "minimum waiting". This also raises the design issue of sufficient menu options for ATM/Telephone and Internet bankers. In most cases the transaction occurs in a neutral location and the availability of an employee may not always be feasible since these facilities often operate 24 hours a day. seven days a week.

2.3 Business value of ICT in Commercial Banks Financial Department

IT productivity has been measured at different levels. including that of nation, sector. and organization although some of this research reported no relationship between IT investment and performance (Strassmann. 1985). while others reported positive associations (Brynjolfsson and Hitt. 1996).

The banking industry is deriving business value from their technology and innovations. Substantial cost savings can arise because applications that use the internet and the internet-based technologies like intranets and extranets are typically less expensive to develop. operate and maintain than traditional systems (O'brien and Marakas, 2008). Although studies of 1980s and into the 1990s did not find significant productivity gains associated with IT investment, often presenting inconclusive results (Berndt and Malone, 1995; Oliner and Sichel. 2000). Jorgenson and Stiroh, (1995) suggested that IT contributed more to productivity growth than ordinary capital.

Further according to O'brien and Marakas, (2008) other primary sources of business value include attracting new customers with innovative marketing and services, and retaining present customers with improved customer service and support. And of course generating revenues through electronic commerce applications to summarize most banks are building e-business e-commerce websites to achieve six major business values; Generate new revenues from online sales, reduce transaction costs through online sales and customer support, attract new customers through via web marketing and advertising and online sales, increase the loyalty of existing customers via improved web customer service an d support, develop new web based markets and distribution channels for existing services and develop new information-based services accessible on the web.

Computer based financial management systems support business managers and professionals in decision s concerning the financing of business and the allocation and control of financial resources within business. major financial management system categories include cash management (forecast and mange cash position) . investment management|manage short-term and other securities) . capital budgeting (evaluate risk and return of capital expenditures) , financial forecasting, and financial planning (forecast financial performance and financing needs). For example, the capital budgeting process involves evaluating the profitability and financial impact of proposed capital expenditures. Long-term expenditure proposals for facilities and equipment t can be analyzed using a variety of return on investment (ROI) evaluation techniques.

According to Leire *et al.*, (2009) this application makes use of spreadsheet models that incorporate present value analysis of expected cash flows and profitability analysis of risk to determine the optimum mix of capital projects for a business.

Financial analysts also typically use electronic spreadsheets and other financial planning software to evaluate the presentt and projected financial performance o f a business. They also help determine the financial needs of business and analyze alternative methods of financing. Financial analysts use financial forecasts concerning the economic situation. business operations. types of financing available, interest rate and stocks and bond prices to develop optimal financing plan for the business alternatives (O`brien and Marakas. 2008).

Electronic spreadsheet packages, DSS software, and web-based groupware can be used to build and manipulate financial models. Answers to what-if and goal-seeking questions can be explored as financial analysts and mangers evaluate their financing and investment t alternatives (O`brien and Marakas, 2008 & Leire *et al.*, 2009).

Much of this study will therefore focus on O`brien and Marakas, (2008) studies and Leire *et al.*, (2009) the business value of ICT in the banking industry based on three indicators of commercial bank performance: cost savings, improvements in the quality of the information, and enhancements in the use of scenario simulations for decision making.

2.4 Productivity Paradox: Why the Contribution of ICT is so Difficult To Measure

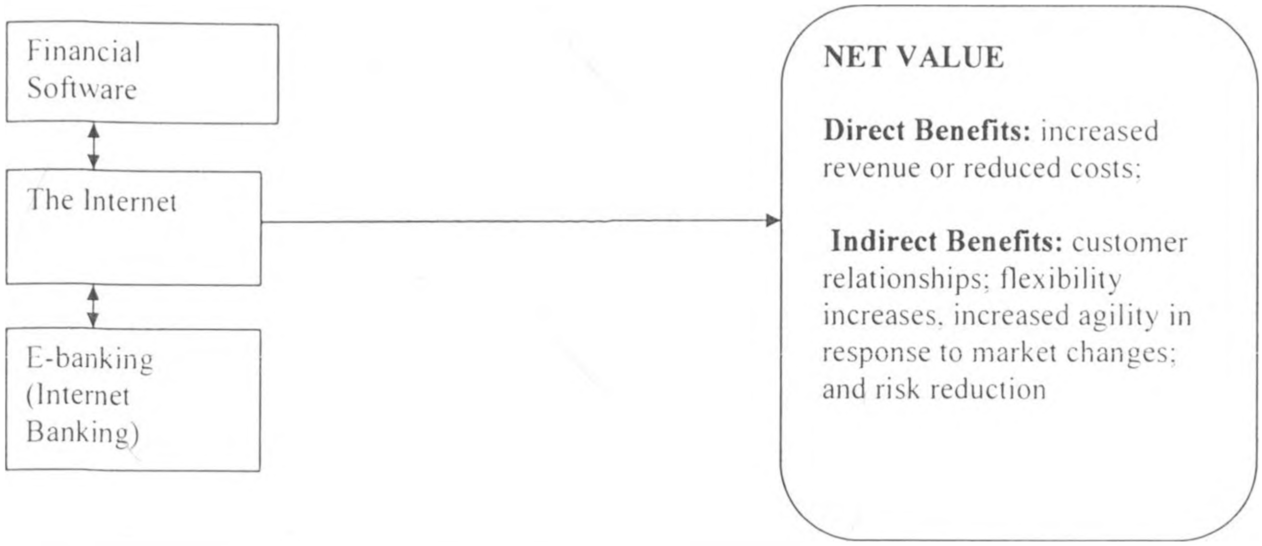
According to Nájera (2005). several studies have been done on the impact of ICT application on organizational performance. which have drawn upon theoretical frameworks from economic theory to explain proposed relationships between ICT investment and various performance indicators. including: productivity. market value. and profitability. The major conclusion or worry is "why the contribution of ICT is so difficult to measure". that is despite significant technological advances and increasing organizational investment in these technologies. the problem of underutilized systems plagues businesses (Venkatesh. 2000).

Today, management's embrace of new technology is a crucial indicator of how successfully ICT will be diffused throughout an organization to improve business performance (Koh, Nam. Prybutok. and Lee. 2007). The Primary contributions of ICT to performance can be measured at the operational level within a firm (Barua et al., 1995). Though ICT is used extensively in financial departments. there is little to no supporting research of its value at this level. an issue which this study intends to address.

2.5 Conceptual Framework

Business value in any organization is the cumulative increase in one or more of the following: direct benefits (increased revenue or reduced costs); indirect benefits (customer relationships; flexibility increases. increased agility in response to market changes; and risk reduction) (Gliedman. 2000). The conceptual framework below depicts the business value at the finance department (*Dependent Variable*) as generating new revenues from online sales, reduce transaction costs through online sales and customer support, attract new customers through via web marketing and advertising and online sales, increase the loyalty of existing customers via improved web customer service and support. develop new web based markets and distribution channels for existing services and develop new information-based services accessible on the web.

That the independent variables revolve around the formative constructs of indicators of financial software, the Internet and e-banking (internet banking). Thus overall value flows are dependent on these three constructs. which are by no means exhaustive but are considered as representative in this study. These relationships are captured in the conceptual framework below:



The net business value is charged against: short-term banking forecasts, at least monthly; the establishment of an optimum cash level; optimization of liquidity; monitoring and optimization of the purchase-payment circuit; monitoring and optimization of the sales-cash circuit: monitoring of banking positions at the value date; day-to-day control of banking positions: maximization of returns on treasury surpluses; minimization of costs of short-term borrowing: coverage of exchange-rate risk and coverage of interest-rate risk

2.5 Literature Review Conclusion

After reviewing the literature it is clear, on the relationships among: ICT use in cash management of financial departments, perceptions of the importance of cash management (the focal activity of financial departments), and the perceived usefulness of ICT to financial department business value. Business value is measured in terms of the perceived importance of ICT with respect to three key indicators: cost savings, improvements in information quality. and enhancements in the use of scenario simulations used in decision making.

This study will investigate the issues raised by the literature and explore three indicators of financial department performance: cost savings, improvements in the quality of the information, and enhancements in the use of scenario simulations, which can then be used to draw comparisons with the existing literature.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

This study will be conducted using a descriptive survey design. This type of design involves a study of a phenomenon at its present being. Mugenda and Mugenda. (1999) pointed out that a survey research design attempts to collect data from members of a population to describe an existing phenomenon by asking individuals about their opinions. attitudes, behaviours or values. This therefore makes this survey design appropriate for this study because the researcher intends to collect data and opinions to ascertain the business value of the rapid developments of information communication technologies in the financial departments of commercial banks in Kenya for their enhanced overall performance advantage.

3.2 Population

The study will target all the commercial banks in Kenya. The population of the study will comprise of forty-four commercial banks incorporated and. or licensed to operate in Kenya (See Appendix III). The unit of analysis will be all the finance departments' officers in the commercial banks operating in Kenya.

3.3 Sample

From the forty-four financial departments of the mainstream banks in Kenya, at least three respondents (financial managers, financial administrators. ICT managers and treasury managers) were to be chosen. The respondents (persons responsible for treasury management) were to be chosen using simple random selection. A sample size of hundred respondents was to be used. Mugenda and Mugenda, (1999) pointed out that a sample size of 30-100 is representative enough to make valid scientific and business inferences and conclusions.

3.4 Data Collection

To guarantee the highest possible number of replies. research respondents were to be made aware of the study in advance by means of a letter indicating the purpose and importance of the research See Appendix I). The main instruments for data collection were questionnaires and document analysis. Questionnaires were used to obtain information from the commercial banks' treasury management. They were preferred in this study because those taking part in the study will be literate and quite able to answer items asked adequately. The questionnaire items of the instruments have some overlapping elements.

This type of questionnaire requires yes/no answers, filling in blank spaces, explaining, ticking the applicable answers. The questionnaire will be made up of three parts: part I has the personal information and the Bank information. This section will collects information related to demographic data such as age, gender, qualifications, experiences etc. Bank information include the Customer base, Bank type and size. Part II has the information communication technologies used in the financial departments of commercial banks in Kenya, to answer the first research objective. Part III has questions on the business value of the rapid developments of information communication technologies in the financial departments of commercial banks in Kenya to answer the second objective.

3.5 Data Analysis

The process of data analysis involved several stages. Completed questionnaires were edited for completeness and consistency. The data was then be coded and checked for any errors and omissions (Kothari, 1990). Frequency tables, percentages and means were used to present the findings. Responses in the questionnaires were tabulated, coded and processed by use of a computer Statistical Package for Social Science (SPSS) - version 12.0 programme to analyze the data.

The response on open-ended questions were reported by descriptive narrative. The results of the study were compared with literature review to establish the business value of the rapid developments of information communication technologies in the financial departments of commercial banks in Kenya to enhance their performance.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter covers data analysis and findings of the research. The data is summarized and presented in the form of proportions. means. tables and graphs. Data was collected from a population that comprised of forty-four commercial banks incorporated and. or licensed to operate in Kenya by 2007.

The collected data has been analyzed interpreted in line with the aim of the study namely: to delineate the extent to which various facets of information communications technology (ICT) are used by the commercial banks in Kenya: and secondly. to investigate the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at their finance departments.

4.2 Organizational and Respondents' Profile

Before assessing the business value of the rapid developments of information communication technologies in the financial departments of commercial banks in Kenya. there was need to check the organizational and respondents' profile as follows:

The respondents were three senior managers, preferably the ICT managers, financial managers, financial administrators and treasury managers ("treasury management") of these banks. Out of the one hundred-twenty (120) respondents to whom the questionnaires were administered, only eighty - five (85) respondents in the commercial banks in Kenya responded. This gave a response rate of seventy one (70.8%) percent.

The number of years an organization has been in operation and the duration one has worked in a given organization influences his/her better understanding on what happens in that organization's decision making process especially at the finance departments. The respondents were asked to indicate the number of years that have worked with their current commercial banks in Kenya. From the research data. 66% of the respondents have worked at the bank for less than 10 years. as 34% has worked for between 20 - 29 years. This takes care of the spread of the "treasury management" ranks and promotions to as ICT managers. financial managers. financial administrators and treasury managers.

The respondents were also asked to indicate the number of branches which the bank has in Kenya. and from the research data. the commercial banks on average have between 3 and 36 branches in Kenya. This is an indication that facets of information communications technology (ICT) for the bank are complex ones. It was also established form the research data that the banks are specializing on both corporate and retail banking.

4.3Functions of Finance Departments of Commercial Banks

The finance departments in commercial banks have specific key functions that are supposed to perform. These activities may require the use of ICT, while others may not. Before assessing the ICT used in finance departments of commercial banks, there was need to check the specific key functions that are performed by finance departments of commercial banks. The respondents were asked to extent to which their banks have emphasized a number of activities that constitute the functions of finance departments of commercial banks using a five-likert scale where 5 = Very high extent; 4 = High Extent; 3 = No Effect; 2 = Low Extent & 1 = Very Low Extent. The descriptive results are as in table 4.1 below.

From the research data in table 4.1 below, the three key functions (Mean ≥ 5 = Very high extent . with a significant standard deviation) that are performed by finance departments of commercial banks are to perform or give short-term banking forecasts, at least monthly, secondly. to exercise day-to-day control of banking positions and lastly to cover the interest-rate risk. The above three activities are the only ones that the study will focus on when checking on the applicability of ICT used in finance departments of commercial banks and the resultant the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at their finance departments in performing the three key functions which are now absolute.

Table 4.1 The Functions of Finance Departments of Commercial Banks

Functions of Finance Departments of Commercial Banks	N	Descriptive Statistics		Rank
		Mean	Std. Deviation	
Short-term banking forecasts, at least monthly	85	5.0000	.00000	1
Day-to-day control of banking positions	85	5.0000	.00000	2
Coverage of interest-rate risk	85	5.0000	.00000	3
Maximization of returns on treasury surpluses	85	4.7294	.44690	4
The establishment of an optimum cash level	85	4.6706	.47279	5
Coverage of exchange-rate risk	85	4.6706	.47279	6
Minimization of costs of short-term borrowing	85	4.4000	.49281	7
Monitoring and optimization of the sales-cash circuit	85	4.3294	.47279	8
Monitoring of banking positions at the value date	85	4.2706	.44690	9
Optimization of liquidity	85	4.0000	.00000	10
Monitoring and optimization of the purchase-payment circuit	85	4.0000	.00000	11

Source: Research Data

The other functions ranked 4-11 (Mean $\geq$ 4 = High Extent . with a significant standard deviation) that are performed by finance departments of commercial banks from the research data in table 4.1 above. are to maximization of returns on treasury surpluses. the establishment of an optimum cash level, coverage of exchange-rate risk. minimization of costs of short-term borrowing, monitoring and optimization of the sales-cash circuit. monitoring of banking positions at the value date, optimization of liquidity, and monitoring and optimization of the purchase-payment circuit. Most of these functions are policy issues given by the central bank of Kenya, which are not within the control of commercial banks. This makes it hard for commercial banks to apply any ICT on management the dimensions of maximization of returns on treasury surpluses, the establishment of an optimum cash level. coverage of exchange-rate risk, minimization of costs of short-term borrowing, monitoring and optimization of the sales-cash circuit. But the function of monitoring of banking positions at the value date is an ignored function which commercial banks can automated and they should be seen to be doing it. This factor is expected to be among the three key functions, as it affected by short-term banking forecasts, at least monthly, day-to-day control of banking positions and the interest-rate risk. It can be taken as a moderating function in the subsequent analysis. These other functions ranking 4-11 will not be considered in the following discussions in 4.4 and 4.5.

Given that there are fewer than two cases. at least one of the variables has zero variance (ranking 1-3. 10 & 11). there is only one variable in the analysis. and correlation coefficients could not be computed for all pairs of variables. Therefore. no further statistics will be computed on functions of finance departments of commercial banks.

4.4Facets of ICT Used In Finance Departments of Commercial Banks

ICT is used to automate processes and to augment the skills of the organization's staff. The first objective of the study was to delineate the extent to which various facets of information communications technology (ICT) are used by the commercial banks in Kenya. This was measured at three levels:

In the first level. the respondents were asked to give their opinion on how they see their finance department of their banks. and the results are as follows in table 4.2.

Table 4.2 Opinion on the Finance Departments of Commercial Banks

Opinion	Percentages	
	Frequency	**Percent**
As a service centre which have an only objective, collections and payments	57	67.1
As a centre that with its activity offer to the firm profits because the management is efficient	28	32.9
Total	**85**	**100.0**

Source: Research Data

From the research data in 4.2 above. in the opinion of the respondents, the majority (67.1 %) view the finance department as a service centre whose only objective is collections and payments. This is actually in line with the two among the three functions established above as perform or give short-term banking forecasts and day-to-day control of banking positions. The issues of profits which received 34% is more strategic than a functional issue at departmental level.

In the second level. the respondents were asked to give extent to which the commercial banks used a number of technological tools in cash management in their finance department using a five – likert scale where 5 = Usually; 4= Several times: 3 = Many times: 2 = Sometimes & 1 = Never and the results are as follows in table 4.3.

Table 4.3 The Technological Tools in Cash Management

Technological Tools In Cash Management	N	Descriptive Statistics		Rank
		Mean	Std. Deviation	
Financial Software	85	4.7294	.44690	1
E-banking (Internet Banking)	85	4.4000	.49281	2
The Internet	85	3.8706	.81340	3

Source: Research Data

From the research data in 4.3 above. the two commonly used technological tools (Mean ≥ 4.4 = usually. with a significant standard deviation) in cash management in the finance department are the financial software and e-banking. This is in line with studies done by Leire *et al*.. (2009). Vasarhelyi and Greenstein, (2003) and Shon and Swatman. (1998) which had noted that ICT in the banking industry includes financial software and e-banking as the most common means of increasing revenue. achieving economies of scale. and reducing unit costs.

In the third level, the respondents were asked to give the level of ICT use in cash management in its finance department in performing a number of activities using a five – likert scale where 5 = Usually: 4= Several times; 3 = Many times; 2 = Sometimes & 1 = Never and the results are as follows in table 4.4.

From the research data in table 4.4, the above two ICT tools (the financial software and e-banking) have been fully applied (Mean ≥ 4.5 = usually, with a significant standard deviation)in the management of cash peaks, in the management of account balances at value dates. and in the management of interest & exchange rate risks. This concurs with Shon and Swatman's, (1998)

Table 4.5 Business Value of ICT Used In Finance Departments

Business Value of ICT Used In Finance Departments	N	Descriptive Statistics		Rank
		Mean	Std. Deviation	
ICT use has ensured proper management of account balances at value dates	85	4.7765	1.00447	1
ICT has helped in the monitoring and optimization of the sales-cash circuit	85	4.6471	.48072	2
ICT has led to system responsiveness to changing user needs.	85	4.5882	.58338	3
ICT has made more and more up-to-date information	85	4.5529	.83817	4
ICT has helped in the coverage of exchange-rate risk	85	4.4941	.82554	5
ICT has helped in the establishment of an optimum cash level	85	4.4235	.82197	6
ICT has led to prompt processing to requests for change to the existing system.	85	4.4118	.49507	7
ICT has helped in the maximization of returns on treasury surpluses	85	4.3059	1.03537	8
ICT has enabled ease of access for users to computing facilities.	85	4.2824	.88118	9
Users' willingness to find time to learn the system.	85	4.2706	.44690	10
ICT use has ensured proper management of payments made and received	85	4.2235	.77730	11
ICT use has ensured proper negotiation with other banks	85	4.2235	.77730	12
ICT use has ensured proper management of cash peaks	85	4.2118	1.01294	13
ICT has enabled fast respond time from finance department	85	4.2000	.98561	14
ICT has increased the ability of the system to improve personal productivity.	85	4.2000	.92324	15
ICT has enabled provision for disaster recovery.	85	4.1882	.82367	16
ICT has helped in the monitoring and optimization of the purchase-payment circuit	85	4.1882	.90625	17
ICT has helped in the day-to-day control of banking positions	85	4.1529	1.35845	18
User confident in system.	85	4.1412	.62016	19
ICT has helped in the coverage of interest-rate risk	85	4.1176	1.37505	20
ICT has led to savings in costs	85	4.0000	.88641	21
ICT has helped in the minimization of costs of short-term borrowing	85	4.0000	1.06904	22
ICT has led to flexibility to produce professional reports (e.g. graphics and desktop publishing).	85	3.9882	.91929	23
ICT has enabled short-term banking forecasts, at least monthly	85	3.9882	.91929	24
ICT use has led to sound monitoring of liquidity of banking operations	85	3.9412	1.00419	25

ICT use has led optimization of liquidity	85	3.8824	.99297	26
ICT has increased the quality of the report delivered to the user.	85	3.8000	.66904	27
ICT has helped in the monitoring of banking positions at the value date	85	3.8000	.94868	28
Flexibility of the system with regards to both data reports.	85	3.7176	.45282	29
ICT use has ensured proper management of cash deficit funding	85	3.7176	.45282	30

Source: Research Data

From the research data in table 4.5. the five key economic benefits of the information communications technology and innovations (Mean ≥ 4.5 = Very high extent, with a significant standard deviation) that have accrued to the commercial banks in Kenya at their finance departments include (Rank 1-5): ICT use has ensured proper management of account balances at value dates. Financial management software and e-banking has indeed enabled the ATM machines and over the counter transactions to be kept up to date. Secondly, ICT has helped in the monitoring and optimization of the sales-cash circuit. The circulation of money within the bank is equally well managed with financial software. given that banks are like cash sellers. Thirdly, ICT has led to system responsiveness to changing user needs. The financial software and e-business tools give flexibility to the financial department when dealing with the ever-changing customer needs. Fourthly, ICT has made more and more up-to-date information since most banking transactions are real-time processing system. Lastly. ICT has helped in the coverage of exchange-rate risk

The other seventeen key economic benefits of the information communications technology and innovations (Mean ≥ 4.0 = High Extent. with a significant standard deviation) that have accrued to the commercial banks in Kenya at their finance departments to high extent include (Rank 6-22): ICT has helped in the establishment of an optimum cash level; ICT has led to prompt processing to requests for change to the existing system; ICT has helped in the maximization of returns on treasury surpluses; ICT has enabled ease of access for users to computing facilities; Users' willingness to find time to learn the system: ICT use has ensured proper management of payments made and received; ICT use has ensured proper negotiation with other banks; ICT use has ensured proper management of cash peaks: ICT has enabled fast respond time from finance department; ICT has increased the ability of the system to improve personal productivity; ICT has enabled provision for disaster recovery; ICT has helped in the monitoring and optimization of the purchase-payment circuit: ICT has helped in the day-to-day control of banking positions: User confident in system: ICT has helped in the coverage of interest-rate risk: ICT has led to savings in costs: and ICT has helped in the minimization of costs of short-term borrowing.

The remaining eight economic benefits that have not been realized by the financial department of commercial banks include: flexibility to produce professional reports (e.g. graphics and desktop publishing): short-term banking forecasts, at least monthly; sound monitoring of liquidity of banking operations: optimization of liquidity; the quality of the report delivered to the user: the monitoring of banking positions at the value date; flexibility of the system with regards to both data reports: and proper management of cash deficit funding

The factors were far too many and factor analysis was performed on the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at the finance departments. in order to reduce the factors into some meaningful number.

The results of the factor analysis using principal component analysis as an extraction method led to eight (8) components extraction in table 4.6 a. From the output in table 4.6a. where total variance is explained. only eight components/factors were extracted and this explains 88.395% (on the extraction sums of squared loadings) of the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at the finance departments.

Table 4.6a Total Variance Explained: Business Value of ICT Used In Finance Departments

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.491	28.303	28.303	8.491	28.303	28.303
2	4.277	14.256	42.559	4.277	14.256	42.559
3	3.918	13.061	55.620	3.918	13.061	55.620
4	3.054	10.179	65.798	3.054	10.179	65.798
5	2.283	7.609	73.408	2.283	7.609	73.408
6	1.858	6.194	79.602	1.858	6.194	79.602
7	1.442	4.808	84.410	1.442	4.808	84.410

8	1.196	3.985	88.395	1.196	3.985	**88.395**
9	.897	2.990	91.386			
10	.823	2.745	94.131			
11	.630	2.098	96.229			
12	.444	1.480	97.710			
13	.252	.838	98.548			
14	.185	.615	99.163			
15	.122	.406	99.569			
16	.083	.276	99.845			
17	.034	.115	99.960			
18	.012	.040	100.000			
19	7.794E-16	2.598E-15	100.000			
20	4.726E-16	1.575E-15	100.000			
21	3.269E-16	1.090E-15	100.000			
22	2.799E-16	9.331E-16	100.000			
23	2.003E-16	6.675E-16	100.000			
24	7.415E-17	2.472E-16	100.000			
25	-4.981E-17	-1.660E-16	100.000			
26	-1.643E-16	-5.475E-16	100.000			
27	-2.929E-16	-9.763E-16	100.000			
28	-3.767E-16	-1.256E-15	100.000			
29	-4.875E-16	-1.625E-15	100.000			
30	-1.054E-15	-3.514E-15	100.000			

Extraction Method: Principal Component Analysis.

Source: Research Data

Table 4.6b Component Matrix (a): Business Value of ICT Used In Finance Departments

Business Value of ICT Used In Finance Departments	Component							
	1	2	3	4	5	6	7	8
ICT has enabled ease of access for users to computing facilities.	**.935**	-.109	-.055	-.081	-.049	.168	.139	.030
ICT has led to prompt processing to requests for change to the existing system.	**.850**	.044	.249	-.100	.138	-.060	-.238	-.002
ICT has increased the ability of the system to improve personal productivity.	**.844**	-.078	-.165	-.136	.248	.019	-.007	-.105
ICT has led to flexibility to produce professional reports (e.g. graphics and desktop publishing).	**.772**	.273	.217	.394	.107	.076	.252	-.167
ICT has enabled short-term banking forecasts, at least monthly	**.698**	-.243	.555	.124	-.274	.111	.159	.077
ICT has helped in the monitoring of banking positions at the value date	**.690**	.024	-.161	.448	-.115	.463	-.231	-.014
ICT has made more and more up-to-date information	**.673**	.157	-.257	-.064	-.360	-.273	-.056	.250
ICT use has ensured proper management of cash deficit funding	**.651**	.032	-.080	.335	.288	-.224	.149	-.193
ICT use has ensured proper management of cash peaks	**.629**	.508	.034	.182	.091	.253	-.414	.090
Users' willingness to find time to learn the system.	**.625**	.278	.623	-.137	.134	-.192	.142	.042
ICT has led to system responsiveness to changing user needs.	**.619**	-.522	.145	-.356	.269	.060	-.024	-.035
ICT has enabled provision for disaster recovery.	**.591**	-.170	-.253	.385	.269	.054	.299	.318
ICT has helped in the monitoring and optimization of the purchase-payment circuit	**.575**	.338	-.358	-.089	-.203	.113	.142	-.395
ICT has helped in the minimization of costs of short-term borrowing	**.562**	.490	-.024	.024	.117	.192	-.536	.047

User confident in system.	**.527**	.248	.513	-.329	.222	-.223	.169	.060
ICT use has ensured proper management of payments made and received	-.126	**.749**	-.402	.448	-.154	-.070	.082	-.061
ICT use has ensured proper negotiation with other banks	-.126	**.749**	-.402	.448	-.154	-.070	.082	-.061
ICT use has led optimization of liquidity	-.100	**.599**	.298	-.447	.226	.098	-.326	-.100
ICT has helped in the coverage of exchange-rate risk	-.251	**.583**	.524	.196	-.041	-.337	.190	-.029
ICT has helped in the day-to-day control of banking positions	.074	**.537**	-.318	-.375	-.051	.395	.472	-.175
Flexibility of the system with regards to both data reports.	-.158	.218	**.737**	.328	.121	.266	.144	-.013
ICT use has ensured proper management of account balances at value dates	-.218	.020	**.518**	.565	.250	.086	-.031	.273
ICT has helped in the maximization of returns on treasury surpluses	.254	-.623	.066	**.314**	-.510	.355	.058	.058
ICT has led to savings in costs	.349	-.310	-.644	**.082**	.281	-.005	-.036	.187
ICT has enabled fast respond time from finance department	.204	.266	-.431	-.256	**443**	.008	.355	.480
ICT has helped in the coverage of interest-rate risk	-.569	.240	-.027	.021	.016	**.600**	.063	.294
ICT use has led to sound monitoring of liquidity of banking operations	-.562	.280	.202	-.337	.278	**.420**	.059	.181
ICT has helped in the monitoring and optimization of the sales-cash circuit	.336	.047	.167	-.641	-.406	**.372**	.158	-.103
ICT has helped in the establishment of an optimum cash level	.245	.191	.036	.002	-.736	-.127	**.383**	.355
ICT has increased the quality of the report delivered to the user.	.284	.383	-.294	-.430	-.338	-.281	-.130	**.397**

Extraction Method Principal Component Analysis
a 8 components extracted.

Source: Research Data

From the results in table 4.6b of the factor analysis using principal component analysis as an extraction method. the above eight (8) components/factors can be explained as follows:

Component/Factor one: Financial Planning and Customer Satisfaction. Sounding financial planning and customer satisfaction is one of the business values of ICT used in finance departments. This can be explained by the ease of access for users to computing facilities: prompt processing to requests for change to the existing system; increased the ability of the system to improve personal productivity: flexibility to produce professional reports (e.g. graphics and desktop publishing): short-term banking forecasts, at least monthly; monitoring of banking positions at the value date: up-to-date information; proper management of cash deficit funding: proper management of cash peaks: responsiveness to changing user needs; provision for disaster recovery: monitoring and optimization of the purchase-payment circuit; minimization of costs of short-term borrowing: and user confident in system.

Component/Factor Two: Proper Management of Payments. Proper management of payments is the second business value of ICT used in finance departments. This can be explained by: proper management of payments made and received: proper negotiation with other banks: optimization of liquidity; coverage of exchange-rate risk: and day-to-day control of banking positions.

Component/Factor Three: Proper Management of Account Balances. Proper management of account balances is the third business value of ICT used in finance departments. This can be explained by: flexibility of the system with regards to both data reports; and proper management of account balances at value dates

Component/Factor Fourth: Cost Savings. This is the fourth business value of ICT used in finance departments. This can be explained by: the maximization of returns on treasury surpluses; and savings in costs

Component/Factor six: Proper Monitoring and Optimization of Banking Operations. Proper monitoring and optimization of banking operations is the sixth business value of ICT used in finance departments. This can be explained by: sound monitoring of liquidity of banking operations; and the monitoring and optimization of the sales-cash circuit.

Component/Factor Fifth. Seven and Eight is explained by: fast respond time from finance department: the establishment of an optimum cash level: and increased the quality of the report delivered to the user. This is because ICT has enabled fast respond time from finance department; ICT has helped in the establishment of an optimum cash level: and ICT has increased the quality of the report delivered to the user.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings and makes conclusions on this study. It also includes the study recommendations for improvement and for further research. The collected data has been analyzed interpreted in line with the aim of the study namely: to delineate the extent to which various facets of information communications technology (ICT) are used by the commercial banks in Kenya; and secondly, to investigate the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at their finance departments. Data was collected from a population that comprised of forty-four commercial banks incorporated and, or licensed to operate in Kenya by 2007. This gave a response rate of seventy one (70.8%) percent.

5.2 Summary

The number of years an organization has been in operation and the duration one has worked in a given organization influences his/her better understanding on what happens in that organization's decision making process especially at the finance departments. From the research data, 66% of the respondents have worked at the bank for less than 10 years, as 34% has worked for between 20 - 29 years. The commercial banks on average have between 3 and 36 branches in Kenya, an indication that facets of information communications technology (ICT) for the bank are complex ones.

The finance departments in commercial banks have specific key functions that are supposed to perform. These activities may require the use of ICT, while others may not. Before assessing the ICT used in finance departments of commercial banks, there was need to check the specific key functions that are performed by finance departments of commercial banks.

The business value of ICT in the finance department of the banking industry is multi-faced, but it was not clear on which ones accrue to commercial banks. The five key economic benefits of the information communications technology and innovations (Mean $\geq$ 4.5 = Very high extent, with a significant standard deviation) that have accrued to the commercial banks in Kenya at their finance departments include (Rank 1-5).

The factors were far too many and factor analysis was performed on the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at the finance departments, in order to reduce the factors into some meaningful number. The results of the factor analysis using principal component analysis as an extraction method led to eight (8) components extraction

5.3 Conclusions

Based on the results from data analysis and findings of the research, one can safely conclude the following, based on the objective of the study;

Firstly, the finance departments in commercial banks have specific key functions that are supposed to perform. These activities may require the use of ICT, while others may not. The three key functions that are performed by finance departments of commercial banks are to perform or give short-term banking forecasts, at least monthly; to exercise day-to-day control of banking positions and lastly to cover the interest-rate risk.

Secondly, ICT is used to automate processes and to augment the skills of the organization's staff. In view the finance department as a service centres whose only objective is collections and payments; the two commonly used technological tools in cash management in the finance department are the financial software and e-banking. The above two ICT tools have been fully applied in the management of cash peaks, in the management of account balances at value dates, and in the management of interest & exchange rate risks.

Thirdly, the business value of ICT in the finance department of the banking industry is multi-faced, but it was not clear on which ones accrue to commercial banks. The five key economic benefits of the information communications technology and innovations that have accrued to the commercial banks in Kenya at their finance departments include: ICT use has ensured proper management of account balances at value dates: ICT has helped in the monitoring and optimization of the sales-cash circuit: ICT has led to system responsiveness to changing user needs: and ICT has helped in the coverage of exchange-rate risk.

Fourth, the factors were far too many and factor analysis was performed on the economic benefits of the information communications technology and innovations used by commercial banks in Kenya at the finance departments. Only eight (8) components were extracted.

5.4 Recommendations for Improvement

The following eight economic benefits that have not been realized by the financial department need to be addressed within the commercial banks in Kenya: flexibility to produce professional reports (e.g. graphics and desktop publishing): short-term banking forecasts, at least monthly: sound monitoring of liquidity of banking operations: optimization of liquidity; the quality of the report delivered to the user: the monitoring of banking positions at the value date; flexibility of the system with regards to both data reports: and proper management of cash deficit funding. This is because the banking sector complexity and technological change should be the composite measure of perceived value of ICT in the banks' ICT planning process.

5.5 Recommendations for Further Research

Areas of further research that were identified include a similar study to be carried out on other sectors of micro - financial sector. A study on the relationship between ICT planning intensity and financial performance should be done to determine how the relationship between ICT planning intensity and financial performance can be managed for optimization in the turbulent environment and to what extent can the non-financial benefits if any be quantified by the organizations.

5.6 Limitations of the Study

The following factors were the greatest hurdles while conducting the study: Due to poor equipped libraries it took long to get the required data and literature. Some of the respondents had no information hence giving out data which was not satisfactory. Lastly, it took long when collecting the questionnaires because some of the respondents kept them and never bothered to answer.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

I am an MBA Candidate in the Department of Management Science. School of Business. University of Nairobi. I am in my research year of my postgraduate studies. Your bank is part of our chosen sample between all the Commercial Banks in Kenya. We need your collaboration for carrying on the investigation titled "**The Business Value of Information Communication Technologies in the Financial Departments of Commercial Banks in Kenya**". The main objective of the research will be to investigate the business value of the rapid developments of information communication technologies in the financial departments of commercial banks in Kenya.

If you are interested in the results from this study you are welcome to request a copy of the final report by supplying your name and email address. Any queries regarding the questionnaire or the overall study can be directed to the undersigned. Please be assured that this information is sought for research purposes only and your responses will be strictly confidential. No individual's responses will be identified as such and the identity of persons responding will not be published or released to anyone.

All information will be used for academic purposes only. Please assist me in gathering enough information to present a representative finding on the business value of the rapid developments of information communication technologies in the financial departments of commercial banks in Kenya. by completing the attached questionnaire. Your participation is entirely voluntary and the questionnaire is completely anonymous. Thank you very much for helping with this important study.

Sincerely.

<u>Gladys Monchari Ondimu</u>

Mobile: +254-725-701622

APPENDIX II: QUESTIONNAIRE.

SECTION A: DEPARTMENT & RESPONDENT'S PROFILE

1. Name of the Bank…………………………………2. Number of Years in Operation……….

3. Number of years of service at the Bank………………………………………………….

4. The number of branches …………………

5. Highest Level of Education ………………………………………………………....

6. To what extent has your bank emphasized the following activities in its finance department? Use the following scale: 5 = **Very high extent**; 4 = **High Extent;** 3 = **No Effect**; 2 = **Low Extent** & 1 = **Very Low Extent**

Activities In The Finance Department	**Rating**
Short-term banking forecasts, at least monthly	[1] [2] [3] [4] [5]
The establishment of an optimum cash level	[1] [2] [3] [4] [5]
Optimization of liquidity	[1] [2] [3] [4] [5]
Monitoring and optimization of the purchase-payment circuit	[1] [2] [3] [4] [5]
Monitoring and optimization of the sales-cash circuit	[1] [2] [3] [4] [5]
Monitoring of banking positions at the value date	[1] [2] [3] [4] [5]
Day-to-day control of banking positions	[1] [2] [3] [4] [5]
Maximization of returns on treasury surpluses	[1] [2] [3] [4] [5]
Minimization of costs of short-term borrowing	[1] [2] [3] [4] [5]
Coverage of exchange-rate risk	[1] [2] [3] [4] [5]
Coverage of interest-rate risk	[1] [2] [3] [4] [5]
Others	

SECTION B: ICT USED IN FINANCE DEPARTMENTS OF COMMERCIAL BANKS

1. How you consider the finance department of your bank?
   a. As a service centre which have an only objective. collections and payments [ ]
   b. As a centre that with its activity offer to the firm profits because the management is efficient [ ]
   c. I don't know [ ]

2. To what extent has your bank used the following technological tools used in cash management in its finance department? Use the following scale: 5 = **Usually**: 4= **Several times;** 3 = **Many times**: 2 = **Sometimes** & 1 = **Never**

Technological Tools Used In Finance Department	**Rating**
Financial Software	[1] [2] [3] [4] [5]
The Internet	[1] [2] [3] [4] [5]
E-banking (Internet Banking)	[1] [2] [3] [4] [5]
Others	

3. What is the level of ICT use in cash management in its finance department in the following activities? Use the following scale: 5 = **Usually**: 4= **Several times;** 3 = **Many times**: 2 = **Sometimes** & 1 = **Never**

The Level of ICT Use In Finance Department	**Rating**
Management of payments made and received	[1] [2] [3] [4] [5]
Monitoring of liquidity of banking operations	[1] [2] [3] [4] [5]
Short-term cash forecasts	[1] [2] [3] [4] [5]
Management of account balances at value dates	[1] [2] [3] [4] [5]
Negotiation with other banks	[1] [2] [3] [4] [5]
Management of cash deficit funding	[1] [2] [3] [4] [5]
Management of cash peaks	[1] [2] [3] [4] [5]
Management of interest & exchange rate risks	[1] [2] [3] [4] [5]
Others	[1] [2] [3] [4] [5]

SECTION C: BUSINESS VALUE OF ICT USED IN FINANCE DEPARTMENTS

1. Please score of business value of the use of ICT in your bank's financial department. Use the following scale: 5 = **Very high extent**; 4 = **High Extent;** 3 = **No Effect**; 2 = **Low Extent** & 1 = **Very Low Extent**

Business Value Of The Use of ICT	**Rating**
ICT has led to savings in costs	[1] [2] [3] [4] [5]
ICT has enabled ease of access for users to computing facilities.	[1] [2] [3] [4] [5]
User confident in system.	[1] [2] [3] [4] [5]
ICT has enabled fast respond time from finance department	[1] [2] [3] [4] [5]
ICT has enabled provision for disaster recovery.	[1] [2] [3] [4] [5]
ICT has led to system responsiveness to changing user needs.	[1] [2] [3] [4] [5]
ICT has increased the ability of the system to improve personal productivity.	[1] [2] [3] [4] [5]
ICT has increased the quality of the report delivered to the user.	[1] [2] [3] [4] [5]
Flexibility of the system with regards to both data reports.	[1] [2] [3] [4] [5]
Users' willingness to find time to learn the system.	[1] [2] [3] [4] [5]
ICT has led to prompt processing to requests for change to the existing system.	[1] [2] [3] [4] [5]
ICT has led to flexibility to produce professional reports (e.g. graphics and desktop publishing).	[1] [2] [3] [4] [5]
ICT has enabled short-term banking forecasts, at least monthly	[1] [2] [3] [4] [5]
ICT has helped in the coverage of exchange-rate risk	[1] [2] [3] [4] [5]
ICT has helped in the coverage of interest-rate risk	[1] [2] [3] [4] [5]
ICT has helped in the day-to-day control of banking positions	[1] [2] [3] [4] [5]
ICT has helped in the establishment of an optimum cash level	[1] [2] [3] [4] [5]
ICT has helped in the maximization of returns on treasury surpluses	[1] [2] [3] [4] [5]
ICT has helped in the minimization of costs of short-term borrowing	[1] [2] [3] [4] [5]
ICT has helped in the monitoring and optimization of the purchase-payment circuit	[1] [2] [3] [4] [5]
ICT has helped in the monitoring and optimization of the sales-cash circuit	[1] [2] [3] [4] [5]
ICT has helped in the monitoring of banking positions at the value date	[1] [2] [3] [4] [5]
ICT has made more and more up-to-date information	[1] [2] [3] [4] [5]
ICT use has ensured proper management of account balances at value dates	[1] [2] [3] [4] [5]
ICT use has ensured proper management of cash deficit funding	[1] [2] [3] [4] [5]
ICT use has ensured proper management of cash peaks	[1] [2] [3] [4] [5]
ICT use has ensured proper management of payments made and received	[1] [2] [3] [4] [5]
ICT use has ensured proper negotiation with other banks	[1] [2] [3] [4] [5]
ICT use has led optimization of liquidity	[1] [2] [3] [4] [5]
ICT use has led to sound monitoring of liquidity of banking operations	[1] [2] [3] [4] [5]
Others	

APPENDIX III: A LIST OF COMMERCIAL BANKS

Commercial Bank	Telephone	Physical Address	Peer Group	Branches
1.African Banking Corporation Ltd.	020-223922	ABC Bank. Mezzanine Floor. Koinange Street	Medium	7
2. Bank of Africa Kenya Ltd	020-211175	Re-Insurance Plaza Taifa Rd	Medium	3
3. Bank of Baroda (K) Ltd	020-248402	Baroda House Koinange Street	Medium	6
4. Bank of India	020-221414	Kenyatta Avenue	Medium	4
5. Barclays Bank Of Kenya Ltd	020-210577/313405	Barclays Plaza Loita Street	Large	43
6. CFC Bank Ltd	020-36380000	CFC Centre Chiromo Rd Westlands Nairobi	Large	5
7. Charterhouse Bank Ltd	020-242246	Longonot Place 6th Floor Kijabe Street Under Statutory Management	Medium	10
8. Chase Bank (K) Ltd	020-244035/245611	Prudential Ass. Building 6th Floor Wabera Street	Small	2
9. Citibank N.A Kenya	020-2711211	Citibank House Upper Hill Rd	Large	2
10. City Finance Bank Ltd	020-224238	Unity House Koinange Street	Small	1
11. Co-operative Bank Of Kenya Ltd	020-3276100	Co-operative House	Large	37
12. Commercial Bank Of Africa Ltd	020-2884000	CBA Building. upper hill	Large	12
13. Consolidated Bank of Kenya Ltd	020-340208/340836	Consolidated Bank House Koinange Street	Small	11
14. Credit Bank Ltd	020-222300	Ground Floor Mercentile Hse Koinange Street	Small	4
15. Development Bank of Kenya Ltd	020-340401	Finance House Loita Street	Small	1
16. Diamond Trust Bank (K) Ltd	020-210988	Nation Centre 8th Floor Kimathi Street	Large	5
17. Dubai Bank Kenya ltd	020-311109	I C E A Building Kenyatta Avenue	Small	3
18. East African Building Society	020-2883000	Fedha Towers Muindi Mbingu Strett	Medium	9
19. Equatorial Commercial Bank Ltd	020-311205	Sasini House Loita Street	Small	2
20. Equity Bank Ltd	020-2736617	NHIF Building 14th floor Community	Medium	36

21. Family Finance Building Society	020-318173	Fourways Towers Muindi Mbingu st	Small	28
22. Fidelity Commercial Bank Ltd	020-242348	I.P.S Building 7th Floor Kimathi Street	Small	3
23. Fina Bank Ltd	020-246943	Fina House Kimathi Street	Medium	5
24. Giro Commercial Bank Ltd	020-340537	Giro House Kimathi Street	Medium	6
25. Guardian Bank Ltd	020-226771	Main Branch Moi Avenue Nairobi	Medium	5
26. Habib Bank A.G Zurich	020-341172/77	Nagina House Koinange Street	Medium	4
27. Habib Bank Ltd	020-246613	Exchange Building Koinange Street	Small	4
28. Housing Finance Ltd	020-221101	Rehani House Kenyatta Ave	Medium	10
29. Imperial Bank Ltd	020-2719617	Bunyala Road Upper Hill	Medium	5
30. Investment and Mortgages Bank Ltd	020-310105/7	I @ M Bank House 2nd Ngong Ave	medium	9
31. K-Rep Bank Ltd	020-3871511	Naivasha Road Riruta	Small	28
32. Kenya Commercial Bank Ltd	020-3270000	Kencom House Moi Ave	Large	119
33. Middle East Bank (K) Ltd	020-2723120	Mebank Tower Milimani Road Nairobi	Small	2
34. National Bank of Kenya Ltd	020-226471	National Bank Building Harambee Avenue	Large	23
35. National Industrial Credit Bank Ltd	020-2888000	N.I.C House Masaba Road	Large	5
36. Oriental Commercial Bank Ltd	020-228461/2	Finance Hse Koinange St	Small	4
37. Paramount Universal Bank Ltd	020-4449266	Sound Plaza Building Westlands	Small	3
38. Prime Bank Ltd	020-4203000	Riverside Drive	Medium	9
39. Prime Capital and Credit Ltd	020-223644	Kenindia House Loita Street 4th Floor	Small	1
40. Southern Credit Banking Corp. Ltd	020-220948	Off Muranga Road	Small	10
41. Stanbic Bank Kenya Ltd	020-342771	Stanbic Bank Building Kenyatta Avenue	Large	8
42. Standard Chartered Bank (K) Ltd	020-32093000	Stanbank House Moi Avenue	Large	28
43. Trans-National Bank Ltd	020-224234	Transnational Plaza Mama Ngina Street	Small	7
44. Victoria Commercial Bank Ltd	020-2719815	Victoria Towers Kilimanjaro Avenue Upper Hill	Small	1

Source: Central Bank of Kenya. Commercial Banks Directory (2007)