

**A SURVEY ON IMPACT OF ICT ON BUSINESS VALUE CREATION
IN KENYAN BANKING SECTOR**

BY

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DECLARATION

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

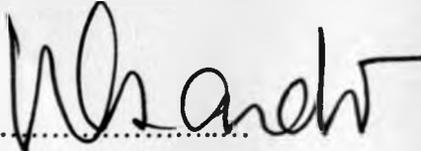
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This research project has been submitted with my approval as a university supervisor.

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First and foremost is to thank God Almighty for blessing me with life, family, wisdom and knowledge

Secondly, I want to thank my project supervisor Mrs Nyamute, moderator Dr. Aduda for their guidance and inputs in this project. Thank you for making my research work so much easier

Thirdly, I am grateful to Kenya Commercial Bank for sponsoring my MBA course. I will strive to serve the bank and the country at large with dedication and integrity

Fourthly, I acknowledge my family and especially my daughter Michelle for inspiring me by always asking me when I shall graduate. This kept me wanting to work harder on my research project

To my lecturers, thank you for advancing my framework of knowledge and skills. Thank you too my fellow MBA students who helped me build on this framework through group discussions and shared ideas

DEDICATION

This research project is dedicated to my mother Margaret, my beloved wife Nilipher, daughter Michelle and son Peter for their support and enduring moments during my absence

ABSTRACT

This study is an evaluation of the business value created by adoption of new integrated systems being implemented by the Kenyan banking sector. The new electronic age has transformed the production and marketing of banking services. Customers nowadays demand new and differentiated financial products and services. The main objective of this study was to examine the degree of adoption of ICT technologies in Kenyan banks such as Core banking system, Automated Teller Machine (ATM) networks, payment systems, Mobile banking, Tele-banking, Internet banking and the impact these technologies have on business values creation in the banks. In essence banks must search for new strategies of products development and marketing. With pressure from dynamic and advancement of information and communication technology (ICT), different electronic distribution channels have been adopted to meet the demands of customers.

The data was obtained from employees of thirty banks out of a population of forty six banks that have recently installed new integrated Core banking systems and integrated the new technologies like MPESA Mobile banking, RTGS payment system, ATM banking, Tele-banking and Internet banking in order to enhance the business value creation and be competitive in the face of customer demands and sophistication. The data was collected through questionnaires filled by ICT and business managers of the respective banks on the spread of ICT technologies and its impact. The data was analyzed with the help of SPSS statistical software Version 17.0 it was found that the percentages of impact on local criteria, global criteria and customer services were 81%, 82% and 80% respectively.

The findings are that adoption of ICT has influenced the content and quality of banking operations thus creating value that enhances financial performance for the banks and customer satisfaction. ICT was found to present great potential for business process re-engineering of Kenyan Banks. Investment in information and communication technology formed an important component in the overall strategy of banking operators to ensure effective performance. In conclusion, 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.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Considerable research has been conducted in order to investigate the relation between ICT investment and business performance, due to the big ICT investments made by firms all over the world, which pose the critical question of how productive these investments are. The first period of this research, from the mid 1980s until the mid 1990s, contrary to expectations, provided very little empirical evidence of a positive and statistically significant relation between ICT investment and business performance (e.g. Strassman, 1990; Strassman, 1997). These early results posed critical questions to managers and researchers concerning the productivity and the usefulness of ICT investments, referred to as the 'ICT Productivity Paradox' (Brynjolfsson, 1993), which is summed up in R. Solow's statement that 'you can see the computer age everywhere but in the productivity statistics' (Solow 1987). However, the second period of this research, from the mid 1990s until today, has provided empirical evidence of positive and statistically significant relation between ICT investment and some measures of business performance (e.g. Brynjolfsson & Hitt, 1996; Stolarick, 1999; Gilchrist et al, 2001; OECD, 2003). Subsequent research in this area has revealed that the positive impact and the benefits from ICT investment vary significantly among firms, depending to a large extent on the combination of 'hard' ICT investments (e.g. in computers' hardware, software and networks) with appropriate 'soft investments' in new organizational practices and skills (organizational and human capital) (Arvanitis, 2005; Arvanitis & Loukis, 2009), business process re-engineering (Grover et al, 1998; Loukis et al, 2009).

1.1.1 Information and Communication Technology

Information and 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).

Information and Communication Technology is at the centre of this global change curve. Laudon and Laudon (1991) 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. ICT is the automation of processes, controls, and information production using computers, telecommunications, software and ancillary equipment such as automated teller machine and debit cards (Khalifa 2000). ICT products in use in the banking industry include Automated Teller Machine, Smart Cards, Mobile Banking, Internet Banking, MICR, Electronic Funds Transfer, Electronic Data Interchange, Credit reference Bureaus for computerized credit rating, Electronic Home and Office Banking.

1.1.2 Business Value Creation Analysis

Porter's (1985) value chain framework analyzes value creation at the firm level. Value chain analysis identifies the activities of the firm and then studies the economic implications of those activities. It includes four steps: (1) defining the strategic business unit, (2) identifying critical activities, (3) defining products, and (4) determining the value of an activity. The main questions that the value chain framework addresses are as follows: (1) what activities should a firm performs, and how? and (2) what is the configuration of the firm's activities that would enable it to add value to the product and to compete in its industry? Value chain analysis explores the primary activities, which have a direct impact on value creation, and support activities, which affect value only through their impact on the performance of the primary activities. Primary activities involve the creation of physical products and include inbound logistics, operations, outbound logistics, marketing and sales, and service.

Porter defines value as 'the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue ... A firm is profitable if the value it commands exceeds the costs involved in creating the product' (Porter, 1985: 38). Value can be created by differentiation along every step of the value chain, through activities resulting in products and services that lower buyers' costs or raise buyers' performance. Drivers of product differentiation, and hence sources of value creation, are policy choices (what activities to perform and how), linkages

(within the value chain or with suppliers and channels), timing (of activities), location, sharing of activities among business units, learning, integration, scale and institutional factors (see Porter, 1985: 124–127). (Porter and Millar 1985) argue that information technology creates value by supporting differentiation strategies.

Value chain analysis can be helpful in examining value creation in virtual markets. For example, Amazon.com decided to build its own warehouses in order to increase the speed and reliability of the delivery of products ordered online. By doing so, it was able to add value to sales and fulfillment activities. (Stabell and Fjeldstad 1998) found the value chain model more suitable for the analysis of production and manufacturing firms than for service firms where the resulting chain does not fully capture the essence of the value creation mechanisms of the firm. Citing the example of an insurance company, they ask: ‘what is received, what is produced, what is shipped?’ (Stabell and Fjeldstad, 1998:414). Similar questions can be asked about the activities of e-business firms such as Amazon.com and about e-businesses whose main transactions involve the processing of information flows. Building on this insight (Rayport and Sviokla 1995) proposes a ‘virtual’ value chain that includes a sequence of gathering, organizing, selecting, synthesizing, and distributing information. While this modification of the value chain concept corresponds better to the realities of virtual markets, and in particular to the importance of information goods (Shapiro and Varian, 1999), there may still be room to capture the richness of e-business activity more fully. Value creation opportunities in the banking sector may result from new combinations of information, physical products and services, innovative configurations of transactions, and the reconfiguration and integration of resources, capabilities, roles and relationships among suppliers, partners and customers.

1.1.3 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), governs the Banking industry in Kenya. The banking sector in Kenya 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 Central Bank of Kenya (CBK) publishes information on Kenya's commercial banks and non-banking institutions, interest rates and other publications and guidelines. The Central Bank of Kenya acts as the main regulator of commercial banks in Kenya (CBK Annual Report, 2009).

There are forty-six (46) banks and non-bank financial institutions, fifteen micro-finance institutions and forty-eight exchange bureaus in Kenya. Thirty-five (35) of the banks, most of which are small to medium sized, are locally owned. The banking industry in Kenya is dominated by few large banks most of which are foreign-owned, though some are partially locally owned. Six of the major commercial banks are listed on the Nairobi Stock Exchange (NSE). The banks have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banks' interests and addresses issues affecting member institutions. The commercial banks and non-banking institutions offer corporate and retail banking services but a small number, mainly comprising the larger banks, offer other services including investment banking (CBK Annual Report 2009).

1.2 Statement of the problem

In essence, ICT-business strategy formulation revolves around the concepts of value creation, its sources, and impacts on business performance, they are recognized the source of superior performance. Consideration of each of these various concepts and the relationships between them is necessary for a comprehensive understanding of ICT-business value creation in banks.

From both research and applied perspectives there are few studies published on this topic. There is a need to combine and concentrate the efforts of academic researchers in a holistic approach to ICT-business value creation. There is a limited understanding of what determines how the value is created in e-business and there is currently no tested framework that unifies all relevant concepts in an easy to understand and practical way. As such, one of the principal goals of this study is to develop an enhanced framework, which can explain value creation of ICT-business in banks. Such a framework would benefit research in ICT-business and also help to eliminate confusion as to where a bank should focus its ICT-business strategies and investments for optimum organizational performance.

Broadly speaking, this study relates to the continued debate on information technology (IT) payoffs. The amount of empirical research on the business value of IT, and e-business in particular, has been diverse and yet limited both conceptually and methodologically. However, there is a scarcity of research into the value of the ICT-business strategies on the firm in terms of organizational performance. An important aspect of the problem is whether ICT-business value is created if the firm uses adequately the sources of ICT-business value creation.

1.3 Objectives of the Study

The study was guided by the following specific objectives:

- i. Establish the degree of adoption of ICT technologies
- ii. Impact of ICT technologies on business value creation in banks

1.4 Importance of the Study

Academicians and Researchers

There is a need to combine and concentrate the efforts of academic researchers in a holistic approach to e-business value creation. There is a limited understanding of what determines how the value is created in e-business and there is currently no tested framework that unifies all relevant concepts in an easy to understand and practical way. As such, one of the principal goals of this study is to develop an enhanced framework, which can explain value created by ICT in banks. Such a framework would benefit research in ICT and e-business and also help to eliminate confusion as to where a bank should focus its ICT strategies and investments for optimum organizational performance.

Banks' managers and policy makers

The concept of value creation is at the core of what a firm does, since only superior value creation vis-à-vis rivals opens up the opportunity for superior profitability. Both academic researchers and banks managers spend considerable time looking for the best definition of ICT based business value.

Investors

Nowadays, though, economic viability of any business venture is of paramount importance to managers and investors alike, the investors need to know how the investment in ICT will add value to the business and hence increase the profitability and share value.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter deals with concepts of ICT investments and its impact on business value creation. In addition, the researcher will discuss various empirical studies done in this field, theories and summary conclusion of the literature review.

2.2 Theories on ICT Investment and business performance

The theoretical foundations of the strategic potential of ICT have been laid by the work of Porter (1980) on competitive strategy, which identifies three generic business strategies: differentiation, cost leadership and focus; also it concludes that organizations use these generic strategies in order to control five basic industry forces, which determine their competitive position and profitability: rivalry among existing competitors, bargaining power of suppliers, bargaining power of buyers, threat of substitute products/services and threat of new entrants. Concerning ICT he argues that each of the above strategies requires a different kind of ICT usage in order to be effectively implemented; also, the above five forces can be favorably affected by using ICT.

Important is the contribution of Porter & Millar (1985) on this topic, who identify three basic ways that ICT can affect competition: by altering industry structures, supporting differentiation and cost leadership strategies, and also by spawning entirely new businesses; they also argue that ICT have strategic potential if they can add value to a product or service in at least one of the primary activities (inbound logistics, operations, outbound logistics, marketing and sales, after-sales support and services) or one of the support activities (human resources management, technology development, infrastructure management, procurement) of the value chain.

The relationship between ICT investment and business performance in various countries has only recently been investigated in less developed business environments. These findings are not in

concert with the common understanding of the use of ICT in strategy found in the studies conducted in industrialized nations. Serafeimidis and Doukidis (1999) used the case study approach to investigate the impact of ICT investment on business performance in Greece. They concluded that in their sample, ICT investments could not be related to business financial success. They argue that part of the reason ICT did not impact financial success in their sample was because managers did not have the education to make the best use of strategic information systems.

McFarlan (1984) reinforced the above foundations of the strategic potential of ICT; he argues that ICT can have a strategic impact, if they are used in order to build barriers against new entrants, build switching costs, change the basis of the competition, generate new products and services and change the balance of power in supplier relationships.

Al-Hajri (2008) examined various factors that might act to determine whether a given technology is likely to be adopted by the banking industry in developing country such as Oman by comparing it with a developed country such as Australia. The result indicated that relative advantage, organizational performance, Customer organizational relationship and ease of use, can shed light on the reasons for adoption of Internet technology.

An exploration done by Singhal and Padhmabhan (2008) revealed that utility request, security, utility transaction, ticket booking and funds transfer were major factors contributing to internet banking adoption.

2.3 Developments in Electronic Banking in Kenya

In the last one year, banks have pursued revenue growth strategies based on their ability to acquire new customers and cross-selling more products and services to existing customers by leveraging on technology. During the course of the year, several banks upgraded their core banking systems to either Flex-cube or T24. With globalization and increased accessibility to electronic delivery channels for products and services, banks are continuously innovating to provide a wide range of electronic products and services. The enhanced ICT platforms have

enabled banks to introduce internet and mobile banking services and products such as viewing of statements of accounts, enquiries on status of cheques, cheque book requests, notification of entries into accounts, transfer of funds between designated accounts and utility payment services (CBK: *Bank Supervision Annual Report 2009*).

Electronic banking is fast becoming popular in the banking industry as transactions can be carried out faster and in a safe and secure manner. Furthermore, advanced technologies provide banks with valuable help because traditional legacy systems have hindered the prompt delivery of banking services and the integration of customer information. The number of commercial banks providing electronic banking services stood at 33 out of the 44 banks as at December 31, 2009. In addition, 19 banks out of the 33 banks, offer electronic overseas money transfer services in collaboration with various international money transfer agents.(CBK: *Bank Supervision Annual Report 2009*).

In the interest of the wider financial system stability, the Central Bank of Kenya is responsible to ensure smooth, speedy and safe operations of the nation's payment, clearing and settlement systems. Since 2010, the Central Bank has taken the lead to introduce an efficient and safe payment and settlements for both high value and time critical transactions by introducing the Real Time Gross Settlement (RTGS) system for interbank and third party customers. The RTGS system is a computer-based fund settlement system, which processes and settles each payment instruction individually and irrevocably on a real time basis, using funds in the participants' RTGS Settlement Accounts or Central Bank funds provided under an intraday liquidity facility. At present, the value of transactions settled in the RTGS system accounts for transactions of amounts of over 1 million Kenya Shillings thus removing the clearing process of the cheques that would otherwise take 2 to 4 days to mature thus increasing liquidity in the banks (CBK: *Bank Supervision Annual Report 2009*).

Credit Reference bureaus complement the central role played by banks and other financial institutions in extending financial services within an economy. CRBs help lenders make faster and more accurate credit decisions. They collect, manage and disseminate customer information to lenders within a provided regulatory framework – in Kenya, the Banking (Credit Reference

Bureau) Regulations, 2008 which was operationalised effective 2nd February 2009. Credit histories not only provide necessary input for credit underwriting, but also allow borrowers to take their credit history from one financial institution to another, thereby making lending markets more competitive and, in the end, more affordable. Credit bureaus assist in making credit accessible to more people, and enabling lenders and businesses reduce risk and fraud. Sharing of information between financial institutions in respect of customer credit behavior, therefore, has a positive economic impact (*CBK: Bank Supervision Annual Report 2009*).

2.4 Empirical Studies

Zhu and Kraemer (2005) developed theoretically and evaluated empirically an integrative research model incorporating technological, organizational, and environmental factors, for assessing e-business use and value at the firm level, based on which a series of hypotheses are developed. The theoretical model is tested by using structural equation modeling (SEM) on a dataset of 624 firms across 10 countries in the retail industry. For e-business use, their study has examined six factors, within the TOE framework, as drivers of e-business use. For e-business value, their study has demonstrated that the extent of e-business use and e-business capabilities, both front-end functionalities and back-end integration, contribute to value creation of e-business. The study found that technology competence, firm size, financial commitment, competitive pressure, and regulatory support are important antecedents of e-business use. In addition, the study found that, while both front-end and back-end capabilities contribute to e-business value, back-end integration has a much stronger impact.

Zhu et al., (2004) developed a research model for assessing the value of e-business at the firm level. Based on this framework, they formulated six hypotheses and identify six factors (technology readiness, firm size, global scope, financial resources, competition intensity, and regulatory environment) that may affect value creation of e-business.

Zhu et al., (2003) Based on (TOE) framework they examined the factors: Technology competence , Organizational factors (firm scope, size) and Environmental context (consumer

readiness, trading partner readiness, competitive pressure) for studying E-business adoption by European firms using a survey on a sample size of (3100) firms.

Kuan and Chau (2001) confirmed the usefulness of the TOE framework for studying adoption of complex IS innovations. Based on (TOE) framework they examined the factors: Technological context (perceived direct benefits), Organizational context (perceived financial cost, technical competence) and Environmental context (perceived industry pressure/government pressure) for studying EDI innovation using a survey on a sample size of (575) firms.

Ramamurthy et al. (1999) posited the impact of EDI on firm performance as the consequence of technological, organizational, and environmental factors. Based on (TOE) framework they examined the factors: Organizational factor (management support, expected benefits, resource intensity, compatibility, costs) and Interorganizational factor (competitive pressure, customer support) for studying EDI innovation using a survey on a sample size of (181) firms. Their empirical results indicated that the impact of EDI on operational and market-oriented performance was significantly affected by these factors.

Thong (1999) Based on (TOE) framework he examined the factors: CEO characteristics (CEO's innovativeness and IS knowledge), IS characteristics (relative advantage/compatibility, complexity), Organizational characteristics (business size, employees IS knowledge) and Environmental characteristics, for studying and developing an integrated model of information systems adoption in small business using a survey on a sample size of (168) firms: The alignment of IT strategy with Business strategy positively affects e-business value creation in the bank. The availability of online revenues positively affects e-business value creation in the bank.

(Iacovou et al 1995) developed a model formulating three aspects of Electronic Data Interchange (EDI) adoption—technological factors (perceived benefits), organizational factors (organizational readiness), and environmental factors (Interorganizational context and external pressure)—as the main drivers for EDI adoption, and examined the model using seven case studies. (Iacovou et al), using the technology-organization-environment (TOE) framework, found that the impact of EDI on performance was directly affected by its level of integration with other IS and processes. Their model was further tested by other researchers using larger samples.

Tam (1998) had a similar finding. He examined the impact of IT investment on firm performance in four newly industrialized economies Hong Kong, Singapore, Malaysia, and Taiwan. His findings replicate those studies in the US, finding no relationship between IT expenditures in large firms and stock market return. Tam did not directly study IT use in strategy. Doukidis, Smithson, and Lybereas (1994) demonstrated the value of conducting repeated measurements over time. They report on a five year follow-up of their earlier study of small business use of IT in Greece. One of their conclusions was that Greek small businesses do not follow the maturational stages seen in other studies (Cooper and Zmud 1990).

Harold and Jeff (1995) contend that financial service providers should modify their traditional operating practices to remain viable in the 1990s and the decades that follow. They claim that the most significant shortcoming in the banking industry today is a wide spread failure on the part of senior management in banks to grasp the importance of technology and incorporate it into their strategic plans accordingly.

Woherem (2000) claimed that only banks that overhaul the whole of their core banking and payment 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.

2.5 Summary of Literature Review

This chapter has attempted to exhaustively review literature on the ICT and business value creation. There is a lack of substantial empirical studies in ICT-business value creation, as the majority of studies reported in the literature still rely heavily on case studies and anecdotes, with few empirical data to measure Internet-based initiatives or gauge the scale of their impact on bank performance, partly because of the difficulty of developing measures and collecting data. A more fundamental issue is the lack of theory to guide the empirical work. So far, the literature

has been weak in making the linkage between theory and measures. Hence, there is a need for theoretical development.

RESEARCH METHODOLOGY

Introduction

This chapter discusses the methods the researcher used to collect data for the study. It covers research design, target population, sampling design, data collection instruments, data cleaning procedures and data analysis procedures and reviewed with empirical results as a foundation for the study.

Research Design

The study was descriptive in nature. The major purpose of descriptive research design is to describe the state of affairs as it is at present. According to Neuman and Morgado (1999) a descriptive research is a process of collecting data in order to find the answers to either questions arising from the current status of the subjects in the study. They stated also that the purpose of a descriptive research is to describe and understand the way things are done.

Survey research was used to obtain information concerning the current status of the students to describe what exists with respect to variables of concern in a situation. This study involves a cross sectional survey which describes the exact time and the regression study to investigate the relationship between variables. The primary use of descriptive statistics is to describe information or data through the use of numbers (numeric number of pictures of the variables). The present writing of groups of numbers representing information or data are descriptive statistics (Key, 1997). According to Johnson and Christensen (1999) this type of data is suitable to describe and explain a particular behavior, attitudes, values and opinions.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter involves the methods the researcher used to collect data for the study. These included research design, target population, sampling design, data collection instruments, data collection procedure and data analysis procedures are reviewed with expected results as a representation of the study.

3.2 Research Design

This study was descriptive in nature. The major purpose of descriptive research design is to describe the state of affairs as it is at present. According to Mugenda and Mugenda (1999) a descriptive research is a process of collecting data in order to test hypotheses or answer questions concerning the current status of the subjects in the study. They point out that the purpose of a descriptive research is to determine and report the way things are done.

Descriptive research was used to obtain information concerning the current status of the phenomena to describe what exists with respect to variables or conditions in a situation. The methods involve a range from the survey which describes the status quo and the regression study which investigates the relationship between variables. The primary use of descriptive statistics is to describe information or data through the use of numbers (create number of pictures of the information). The characteristics of groups of numbers representing information or data are called descriptive statistics (Kay, 1997). According to Mugenda and Mugenda (1999) this type of research attempts to describe such things as possible behavior, attitudes, values and characteristics.

3.3 Population

According to Mugenda and Mugenda (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated. This definition ensures that population of interest is homogeneous. And by population the researcher means complete census of the sampling frames. Population studies also called census are more representative because everyone has equal chance to be included in the final sample that is drawn according to Mugenda and Mugenda (1999).

The target population was all commercial banks in Kenya since banks are expected to have ICT in their operations due to the regulatory requirements and the competitive nature of their business environment.

3.4 Sample

A sample of 30 banks out of 46 banks that have implemented various technologies between the years 2004 and 2009 was picked as shown in Appendix II. The sampling group was divided into two groups as follows: 1) business and 2) ICT managers of the 20 selected banks respectively.

3.5 Data Collection

The study used primary data collected by use of questionnaire as the instrument. Two questionnaires were sent to each of the 30 banks in the in Appendix II. The data collection focused on impact of the ICT technologies adoption to the various business activities. The questionnaire was divided into four parts as below:

- i. Spread of ICT technologies in the studied banks
- ii. Impact of ICT technologies on local criteria
- iii. Impact of ICT technologies on Global criteria
- iv. Impact of the ICT technologies on the Customer services

The questionnaire was administered through drop and pick method for the selected managers.

3.6 Data Validity and Reliability

The purpose of validity and reliability is to ensure good quality research. According to Trochim (2005) reliability has to do with the quality of measurement. In its everyday sense, reliability is the “consistency” or “repeatability” of your measures. Validity concerns that whether the concept really measures the aimed concept (Bryman, 2004).

The questionnaire was sent to five IT directors of major banks that have implemented the technologies recently in order to ensure reliability and validity of data.

3.7 Data Analysis

The data collected by use of questionnaires was edited and checked for completeness and comprehensibility. The edited data was summarized and coded for easy classification in order to facilitate tabulation. The tabulated data was then analyzed by calculating various percentages where possible. Descriptive statistics especially, frequencies and cross tabulation was applied to help establish patterns, trends and relationships and to make it easier for the researcher to understand and interpret implications of the study. Presentation of data was done in form of Tables and Bar graphs only where it provided successful interpretation of the findings.

Once the data was edited and checked for correctness, the research was analyzed with the help of SPSS statistical software Version17.0.

CHAPTER FOUR

4.0 DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter provides analysis of data collected from the field. The results are presented in tables to highlight the major findings of the study where fifty four questioners were fully answered out of the sample of sixty. They are also presented sequentially according to the research questions of the study. Mean scores and standard deviations are used to carry out analysis of data collected. The raw data was coded, evaluated and tabulated to depict clearly the results of the statement of the problem.

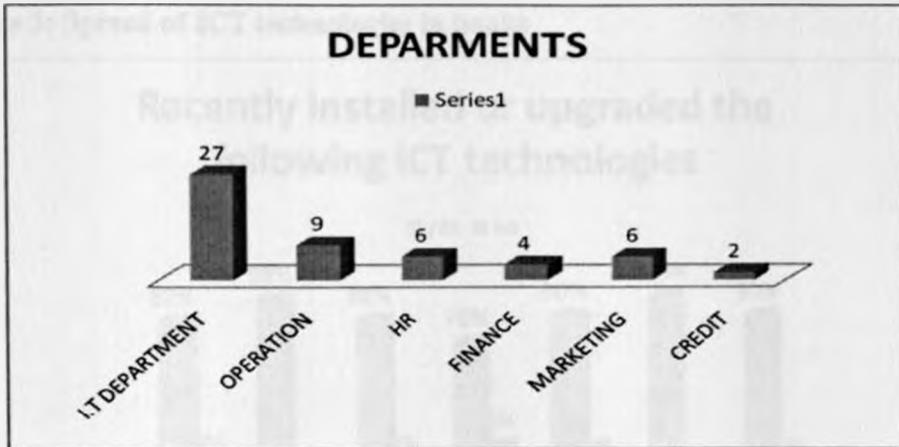
4.2 Demographic Characteristics

The respondents were asked to show their demographic characteristics as was presented in the questionnaire. The characteristics included, the organisation worked, departments worked, designation, years in the position, these have be analyzed as follows.

4.2.2 Department worked

The respondents were asked to show the department they worked where the respondents were to whom data on impact of ICT on business value creation

Figure 1: distributions of respondents to department.



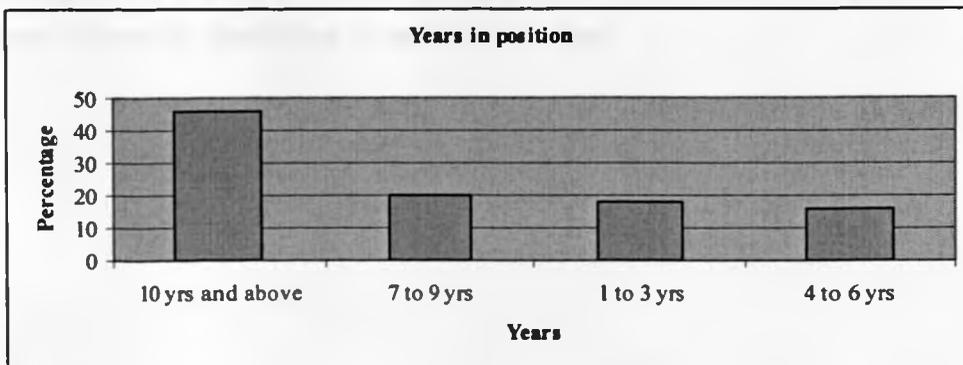
(Researcher data, 2010)

The results of the study show that IT had the majority of respondents which is 50% of the respondents, whereas the other departments had been distributed as shown in the figure 4.1. The implication on the study is that varied responses from the different departments can adequately explore all the expected responses from the entire company.

4.2.4 How many years in current position

The researcher sought to establish the years that the respondents had been in the positions stated. The results show that a majority had been in the firm for 10 years and above, other had also been in the council for 7 to 9 years, this implies that the majority of the respondent had enough experience to give acceptable responses to the study questions. The graph below shows the findings.

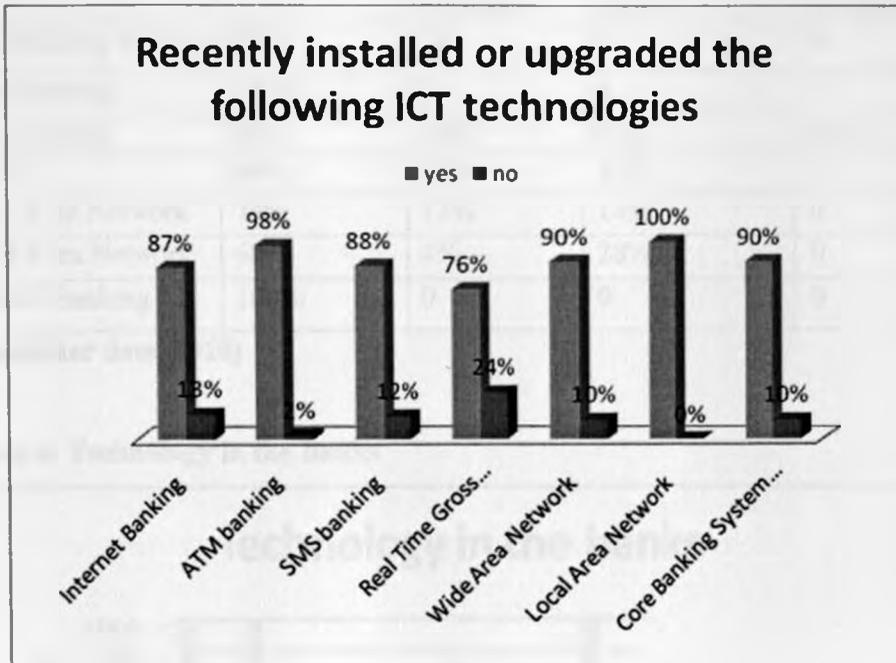
Figure 2: Distribution of years in position



(Researcher data, 2010)

4.3 Spread of ICT technologies in the studied banks

Figure 3: Spread of ICT technologies in banks



(Researcher data, 2010)

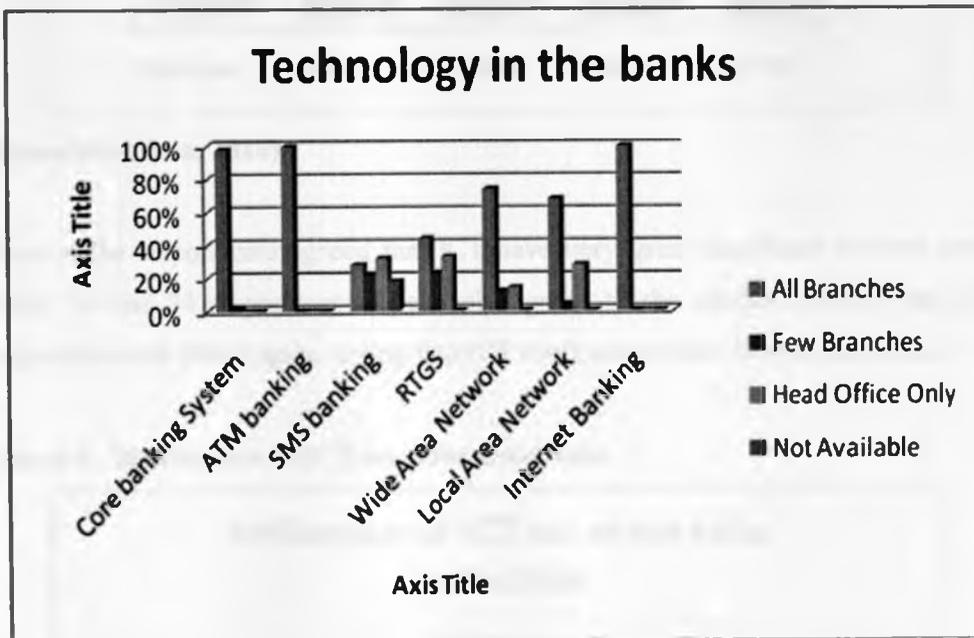
From the field, It was identified that ICT has been spread in the bank industry where data was collected in 27 banks and 100% of the respondent indicated all the banks have local area are in all banks while the respondents indicate the core banking system and the wide area network does not include in all the banks which had a 90% of the respondents agreeing to it. Actually not all the banks had ATM banking where two respondents indication so, also SMS banking has not been fully implemented by all the banks where 88% of the respondents indicated that their banks have SMS banking. RTGs had the lowest acceptance in terms of all the banks in general. The figure 3 shows the distribution of the ICT in the bank.

Table 1: technologies in banks

Technology	All Branches	Few Branches	Head Office Only	Office	Not Available
Core banking System	98%	2%	0		0
ATM banking	100%	0	0		0
SMS banking	28%	22%	32%		18%
RTGS	44%	23%	33%		0
Wide Area Network	74%	12%	14%		0
Local Area Network	68%	4%	28%		0
Internet Banking	100%	0	0		0

(Researcher data, 2010)

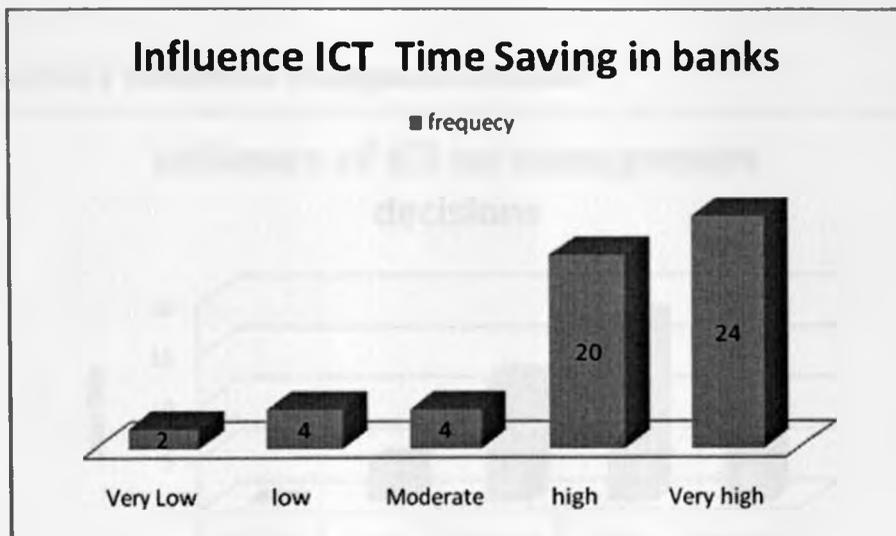
Figure 4: Technology in the banks



(Researcher data, 2010)

4.4 Impact of ICT technologies on local criteria on banks

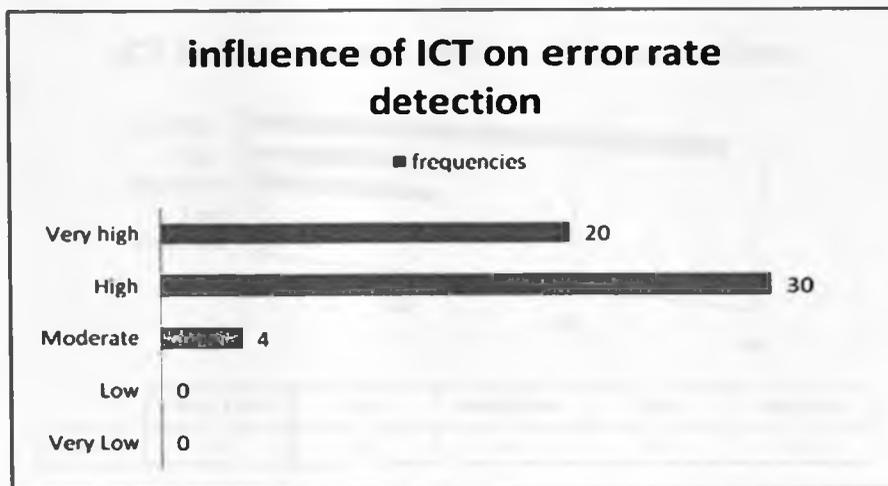
Figure 5: Distribution of ICT time saving in the banks



(Researcher data, 2010)

Most of the respondents agreed that ICT have very great significant in time saving where 24 and 24 respondent respectively agreed to the nations. There were other respondent who didn't agree saying that ICT itself cannot save time in the banks.

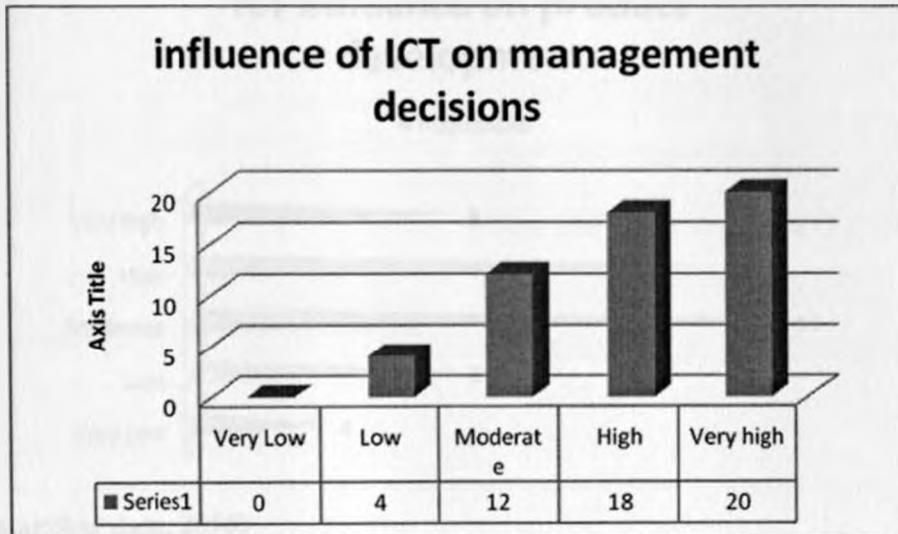
Figure 6: Distribution of ICT on error Detections



(Researcher data, 2010)

With the introduction of ICT most the respondents agreed that there are high error rate detection where most the respondents ticketed high and very high in the scale 30, and 20 respectively.

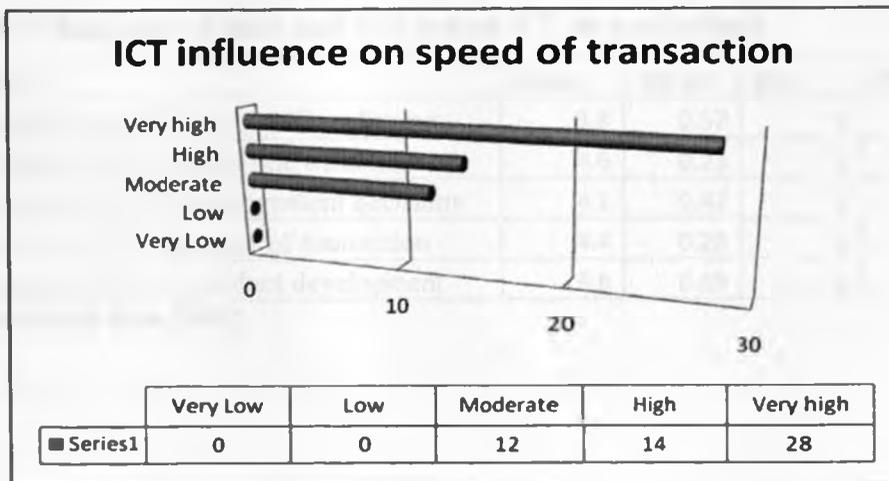
Figure 7: ICT influence on Management decisions



(Researcher data, 2010)

As shown the table above most of the respondent indicates that ICT facilitate management decisions where most of the respondents agreed positively to it.

Figure 8: ICT influence on speed of transaction

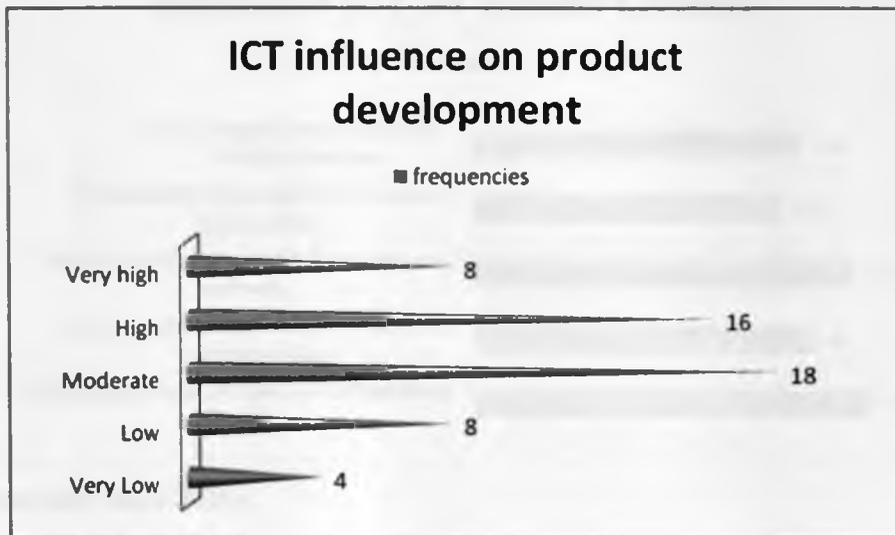


(Researcher data, 2010)

With the introduction of ICT in banking spread of transaction has been fastening. The figure 8 above shows how respondent reacted on how ICT influences speed of

transaction where most of them agreeing that ICT influences speeding of transaction to a very higher extent.

Figure 9: influence of ICT on product development



(Researcher data, 2010)

Most of the respondents indicated that ICT had a moderate influence on products development where 18 of the 54 respondents. This justifies that there are other factor that influences products development other than ICT. The distribution is shown on figure 9.

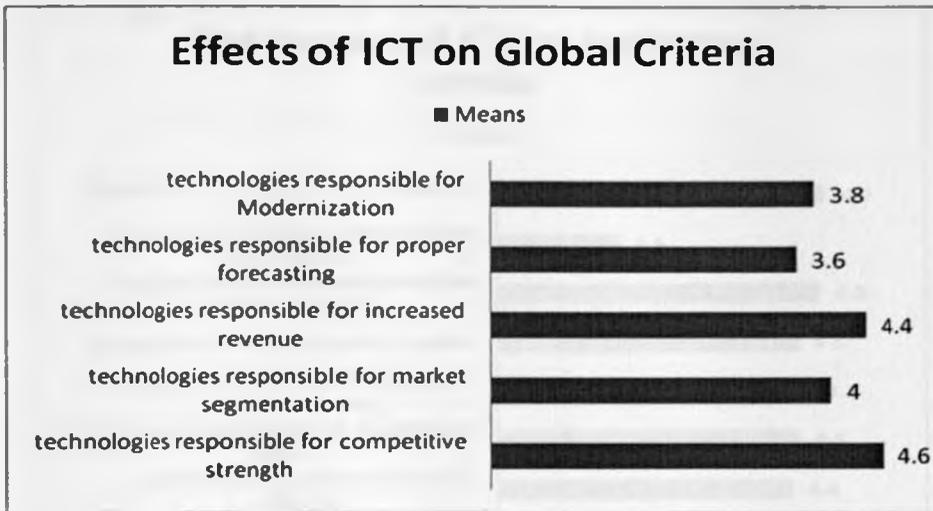
Table 2: Summary of mean and STD dev on ICT on local criteria

Factors	Mean	Std dev	Max	Min
Influence does ICT have on Time Saving	3.8	0.57	5	1
Influence of ICT of error rate detection	4.6	0.23	5	3
Influence of ICT on management decisions	4.1	0.42	5	2
Influence of ICT on speed of transaction	4.4	0.28	5	3
Influence of ICT on product development	3.6	0.69	5	1

(Researcher data, 2010)

4.5 Impact of ICT technologies on Global criteria

Figure 10: Distribution of mean on impact of ICT on Global criteria



(Researcher data, 2010)

Table 3: Impact of ICT on Global criteria

Effects of ICT technologies on Global Criteria	Means	std dev	max	min
technologies responsible for competitive strength	4.6	0.32	5	3
technologies responsible for market segmentation	4	0.48	5	2
technologies responsible for increased revenue	4.4	0.24	5	4
technologies responsible for proper forecasting	3.6	0.85	5	1
technologies responsible for Modernization	3.8	0.67	5	2

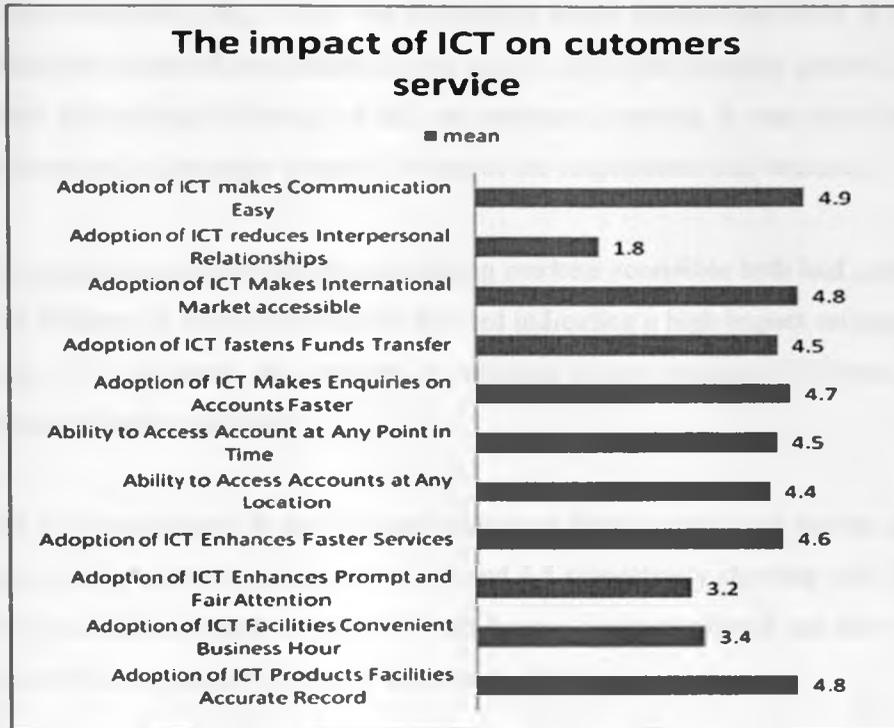
(Researcher data, 2010)

From the scale used in the questioners, 1 to 5 where 5 had the highest score, and 1 the lowest. A mean of various factors were computed from the respondents rates. The mean that is above 2.5 is a clear indication that most of the respondents agreed of the variable of test.

In the data collected there highest means was from the factor that technologies are responsible for competitive strength of banks which had 4.6 while technologies increase a venue had 4.4, technology has an impact of market segmentation with a mean of 4, finally technologies is responsible for proper forecasting was the lowest with a value of 3.6.

4.6 Impact of the ICT technologies on the Customer services

Figure 11: Distribution of mean on impact of ICT on customer service



(Researcher data, 2010)

Table 4: Table on mean on impact of ICT on customer service

Impact of the ICT technologies on the Customer services	mean	std dev.	max	min
Adoption of ICT Products Facilities Accurate Record	4.8	0.12	5	4
Adoption of ICT Facilities Convenient Business Hour	3.4	0.65	5	2
Adoption of ICT Enhances Prompt and Fair Attention	3.2	0.92	5	1
Adoption of ICT Enhances Faster Services	4.6	0.4	5	3
Ability to Access Accounts at Any Location	4.4	0.45	5	3
Ability to Access Account at Any Point in Time	4.5	0.28	5	4
Adoption of ICT Makes Enquiries on Accounts Faster	4.7	0.23	5	4
Adoption of ICT fastens Funds Transfer	4.5	0.3	5	3
Adoption of ICT Makes International Market accessible	4.8	0.26	5	4
Adoption of ICT reduces Interpersonal Relationships	1.8	0.8	5	1

Adoption of ICT makes Communication Easy	4.9	0.13	5	4
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From the respondent rate, Table was formulated where standard deviation is used to measures the spread of respondents on the views while, the favorable mean is above 2.5 from the analysis of impact of ICT on customers services, it was clear that ICT make communication easier where 4.9 mean of the respondents was obtained.

On the impact of accurate record and making markets accessible both had a mean of 4.8 but different in standard deviation thus but indicating a high impact on customers services. ICT facilitates the inquires on account fasters meaning ICT was create influence on banking industry

Ability to access accrual at any location, enhances faster services and access account at any point in time had a mean of 4.4, 4.6 and 4.5 respectively showing that ICT has great impact on customers services. ICT has fastens funds transferred has been agreed by most of the respondents where it has a mean of 4.5

With the adoption of ICT, of facilitates convinces business hours and prompts fair attention had a mean of 3.4 and 3.2 respectively with also a higher standard deviation meaning most of the respondents views varies.

Finally most of the respondents disagree that ICT reduces interpersonal relationships with a mean of 1.8.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the findings of this study. This chapter is organized as follows. First, a summary of the findings in chapter four is provided. Then the conclusions of the study based on the objectives of the study follow. The study then recommends to the stakeholders regarding the findings. Areas for further research are then proposed for academics and scholars wishing to do research on cooperative societies and on change management.

5.2 Summary and Conclusion

The use of Wide Area Network, SMS banking and RTGS, could also be found in the bank headquarters and very few branches. The other ICT products such as ATM, Internet banking was found in all branches of the banks. In line with our findings in the period of adoption, SMS and RTGS still ranked least in its spread while ATM, Core banking system were among the highly adopted in the branches. Increase in the rate of adoption and the spread of ICT products, especially the use of SMS and Internet banking has reduced the influence of cash on financial transactions.

Tables 2 and 3 show the impact of local and global criteria on the adoption of ICT products in the banking industry respectively. The criteria used for the local impact are time saving, error rate reduction, management decisions and speed of transaction while those considered for global impact are competitive strength, market segmentation, improved revenue, proper forecasting and modernisation. Respondents believe that ICT impacts positively on all the criteria. The calculated mean of 3.8 on the likert scale, which is above 2.5 also supports that it saves time. It also reduces error 4.6, speed of transaction 4.4 and assists management to take quality decisions 4.1.

Similarly there was marked impact on the global criteria as shown by the following means, it improves competitive strength 4.6, enhances proper market segmentation 4, improves revenue 4.4, ensures modernisation 3.8 and proper forecasting 3.6.

The positive impact of ICT on the global criteria, especially improved revenue corroborates the findings Laudon, and Laudon, (1991) who studied the entire cash flow of most fortune 500 companies and linked their success to Information System. They concluded that Information Technology directly affects how managers decide, how they plan and what products and services are produced.

Some factors identified to show the effects of ICT products on customer services are shown in Table 4. These factors include facilitation of accurate records, enhancement of convenient business hour, facilitation of prompt and fair attention, enhancement of faster services and availability of SMS and Internet Banking services. About 46 of the respondents strongly agreed and 45 agreed that the adoption of ICT products in banking facilitates accurate records. The mean of 4.8 on the likert scale also supports this view. Similarly, the selected respondents believed that the adoption enhanced convenient business hour, facilitates prompt and fair attention, enhances faster services, and makes SMS and Internet Banking available to customers.

The result of the interview conducted for the customers also showed their positive response towards the adoption of ICT. Customers were happy with great improvement on statement generation, accounts reconciliation and balance enquiry making. Manual recording system through the use of ledger, cash books have been replaced by computerized information system.

Adoption of ICT has influenced the content and quality of banking operations thus creating value that enhances financial performance for the banks and enhances customer satisfaction. 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 Kenya 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 stake holders in the industry.

5.3 Limitations of the Study

The study faced a number of limitations. One of the limiting factors was in coming up with the factors that create value and how value is created without looking at the financial statements and figures since ICT implicitly affects the banks performance.

Secondly, the nature of data which was collected from the bank personnel who could be subjective since they were involved in implementing these technologies and thus and may not look at the customer's perspective but concentrated on delivering technologies so as to beat competition.

The sample of thirty banks that have implemented ICT technologies may not have been representative since many more banks have implemented the technologies due to competition and statutory requirements and were not sampled due to time and resource limitations.

5.4 Suggestions for Further Research

There is need to for a study the impact if ICT on the banks financial performance in Kenya. The study should also take into account the views of the customers who use these technologies to get an unbiased view of the full impact and benefits of the ICT technologies

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APPENDICES

Appendix I: Questionnaire

Kindly answer the following questions by ticking in the appropriate box or filling the spaces provided

Part A: General Information

1. Name of department:
.....
2. What is your designation?
.....
3. What is your total work experience in years?
.....
4. What is the length of time in this organization?
.....

Part B: Spread of ICT technologies in the studied banks

1. Have you recently installed or upgraded any of the following New ICT technologies?

Core Banking System upgrade	Yes []	No []
ATM banking	Yes []	No []
SMS banking	Yes []	No []
Real Time Gross Settlement (RTGS)	Yes []	No []
Wide Area Network	Yes []	No []
Local Area Network	Yes []	No []
Internet Banking	Yes []	No []

2. To what extent is the spread of the above named technologies

Technology	Most Branches	Few Branches	Head Office Only	Not Available
Core banking System				
ATM banking				
SMS banking				

RTGS				
Wide Area Network				
Local Area Network				
Internet Banking				

Part C: Effects of ICT technologies on Local Criteria

1. What Influence does ICT have on Time Saving?

- Very high
- High
- Moderate
- Low
- Very Low

2. What is the influence of ICT of error rate detection?

- Very high
- High
- Moderate
- Low
- Very Low

3. What is the influence of ICT on management decisions?

- Very high
- High
- Moderate
- Low
- Very Low

4. What is the influence of ICT on speed of transaction?

- Very high

- High
- Moderate
- Low
- Very Low

5. What is the influence of ICT on product development?

- Very high
- High
- Moderate
- Low
- Very Low

Part D: Effects of ICT technologies on Global Criteria

6. How are the technologies responsible for competitive strength?

- Highly Responsible
- Responsible
- Fairly Responsible
- Hardly Responsible
- Not Responsible

7. How are the technologies responsible for market segmentation?

- Highly Responsible
- Responsible
- Fairly Responsible
- Hardly Responsible
- Not Responsible

8. How are the technologies responsible for increased revenue?

- Highly Responsible
- Responsible
- Fairly Responsible
- Hardly Responsible

Not Responsible

9. How are the technologies responsible for proper forecasting?

Highly Responsible

Responsible

Fairly Responsible

Hardly Responsible

Not Responsible

10. How are the technologies responsible for Modernization?

Highly Responsible

Responsible

Fairly Responsible

Hardly Responsible

Not Responsible

Part E: Effects of Adoption of ICT technologies Customer Services

11. Adoption of ICT Products Facilities Accurate Record

Strongly Agree

Agree

Hardly Agree

Disagree

Strongly Disagree

12. Adoption of ICT Facilities Convenient Business Hour

Strongly Agree

Agree

Hardly Agree

Disagree

Strongly Disagree

13. Adoption of ICT Enhances Prompt and Fair Attention

- Strongly Agree
- Agree
- Hardly Agree
- Disagree
- Strongly Disagree

14. Adoption of ICT Enhances Faster Services

- Strongly Agree
- Agree
- Hardly Agree
- Disagree
- Strongly Disagree

15. Ability to Access Accounts at Any Location

- Strongly Agree
- Agree
- Hardly Agree
- Disagree
- Strongly Disagree

16. Ability to Access Account at Any Point in Time

- Strongly Agree
- Agree
- Hardly Agree
- Disagree
- Strongly Disagree

17. Adoption of ICT Makes Enquiries on Accounts Faster

- Strongly Agree
- Agree
- Hardly Agree
- Disagree
- Strongly Disagree

18. Adoption of ICT hastens Funds Transfer

- Strongly Agree
- Agree
- Hardly Agree
- Disagree
- Strongly Disagree

19. Adoption of ICT Makes International Market accessible

- Strongly Agree
- Agree
- Hardly Agree

Disagree
Strongly Disagree

20. Adoption of ICT reduces in Interpersonal Relationships

Strongly Agree
Agree
Hardly Agree
Disagree
Strongly Disagree

21. Adoption of ICT makes Communication Easy

Strongly Agree
Agree
Hardly Agree
Disagree
Strongly Disagree

THANK YOU VERY MUCH

Appendix II: Studied Banks

1. Kenya Commercial Bank
2. CFC Stanbic Bank
3. Commercial Bank of Africa
4. K-Rep bank
5. Barclays Bank
6. Co-operative Bank
7. Equity Bank
8. Equatorial Commercial Bank
9. Standard Chartered Bank
10. Family Bank
11. National Bank of Kenya
12. Consolidated Bank
13. Chase Bank
14. Fina Bank
15. Diamond Trust Bank
16. Kenya Women Finance Trust Bank
17. Eco Bank
18. Bank of Africa
19. Bank of Baroda
20. Investments & Mortgages Bank
21. Faulu Kenya
22. Prime Bank
23. Credit Bank
24. Habib Bank
25. African Banking Corporation
26. Development Bank of Kenya
27. Imperial Bank
28. NIC bank
29. Ecobank Kenya Ltd
30. UBA Kenya Bank