

**THE ROLE OF TECHNOLOGICAL INNOVATIONS ON  
PERFORMANCE OF ORGANIZATIONS WITHIN THE BANKING  
INDUSTRY IN KENYA**

**(A Case of Equity Bank Limited)**

**IRENE .C. YEGO**

**D53/CTY/PT/21264/2010**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE AWARD OF MASTERS OF BUSINESS  
ADMINISTRATION DEGREE  
SCHOOL OF BUSINESS,  
KENYATTA UNIVERSITY**

Yego, Irene C.  
*The role of  
technological*



2013/416780

**DECEMBER 2012**

**KENYATTA UNIVERSITY LIBRARY  
MAIN CAMPUS**

## DECLARATION

I declare that, this project is my own original work and has not been presented for award of any degree in any University.

Signed: 

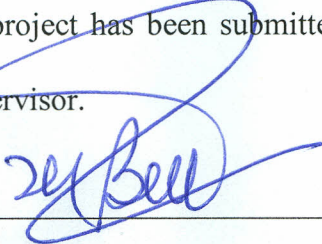
5<sup>TH</sup> NOVEMBER 2012

**IRENE YEGO**

**DATE:**

**REG NO: D53/CTY/PT/21264/2010**

This research project has been submitted for the course examination with my approval as the University supervisor.

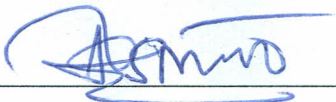
Signed: 

5/11/2012

**NAME: MR. SHADRACK BETT**

**DATE:**

This research project has been submitted for the course examination with my approval as the Chairman of the Department.

SIGNED: 

16/11/12

**NAME: Dr. STEPHEN MUATHE**

**DATE:**

Chairman, Department of Business Administration

## **DEDICATION**

I wish to dedicate this project to my classmates and lecturers of the MBA strategic management class year 2010/2011. I cannot forget my entire family for their support, encouragement and prayers.

May God bless you all.

## **ACKNOWLEDGEMENT**

I forthwith acknowledge the support of my family and my study colleagues who have stood by me throughout my studies and particularly for their unending support.

I pay gratitude to my supervisor Mr. Shadrack Bett for guidance in the course work and the research project. I also wish to thank my supervisor for support, patience and understanding throughout the research period.

I also thank all the lecturers at Kenyatta University.

## ABSTRACT

Technological innovations refer to the process through which technological advances are produced. The developments in technology have resulted in new delivery channels for banking products and services such as mobile banking. All these technological innovations contribute heavily in building customer base, capital base as well as enhancing their profitability which results to influence on their performance. None of the available studies has focused on the effects of technological innovation on the performance of Equity Bank Limited in particular hence the research gap. The main objective of this study was to investigate the effects of technology on performance of Equity Bank. A descriptive research design was used. The target respondents included the 161 departmental heads, assistant departmental heads and lower cadre staffs like the supervisors, accounts and finance officers from the head offices of the Bank. A sample of 30% (48 respondents) was selected using stratified random sampling. The study used of a questionnaire administered individually through drop and pick method. Quantitative data collected was analyzed by the use of descriptive statistics using SPSS and presented through percentages, means, standard deviations and frequencies and displayed by use of tables, figures and in prose-form where appropriate. The various technological innovations adopted by the bank affected its performance. The bank should determine the technical background of the majority of its customers before endeavoring into the use of advanced technologies by assessing the literacy level of its major customers, the specific needs of its target customers and the potential benefits accruing to customers through the use of current technologies. The technologies adopted should address various aspects like customer security, competitive strength, efficient service delivery, convenient locations, partnerships with several organizations and product development. There is need to address convenience, cost of services, awareness of internet services and benefits, ease of use, customer trust, security of transactions and accessibility aspects of technological innovations.

## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>ii</b>
<b>DEDICATION</b> .....	<b>iii</b>
<b>ACKNOWLEDGEMENT</b> .....	<b>iv</b>
<b>ABSTRACT</b> .....	<b>v</b>
<b>TABLE OF CONTENTS</b> .....	<b>vi</b>
<b>LIST OF TABLES</b> .....	<b>viii</b>
<b>LIST OF FIGURES</b> .....	<b>ix</b>
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 Background of the Study .....	1
1.2 Statement of the problem .....	10
1.3 Objectives of the Study.....	12
1.4 Research Questions.....	12
1.5 Significance of the Study.....	12
1.6 Scope of the Study .....	13
<b>CHAPTER TWO: LITERATURE REVIEW</b> .....	<b>15</b>
2.1 Introduction.....	15
2.2 Theoretical Literature .....	15
2.3 Empirical Review .....	19
2.4 Conceptual Framework.....	30
2.5 Research Gaps.....	31
<b>CHAPTER THREE: RESEARCH METHODOLOGY</b> .....	<b>33</b>
3.1 Introduction.....	33
3.2 Research Design .....	33
3.3 Target Population.....	33
3.4 Sample Population .....	34
3.5 Instrumentation .....	35
3.6 Data Collection .....	36
3.7 Data Analysis and Presentation .....	36
3.8 Limitation of the Study .....	36

<b>CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION .....</b>	<b>38</b>
<b>4.1 Introduction.....</b>	<b>38</b>
4.2 Response Rate.....	38
4.3 Background Information.....	39
4.4 Role of Technological Innovations on Firm Performance.....	42
4.5 Effect of Technology on Revenues.....	44
4.6 Effects of Technology on Market Share.....	47
4.7 Effects of Technology on Customer Satisfaction and Retention.....	50
4.8 Effects of Technology on Cost Efficiency.....	52
<b>CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>59</b>
5.1 Introduction.....	59
5.2 Summary of the Findings.....	59
5.3 Conclusions.....	63
5.4 Recommendations.....	65
5.5 Recommendations for Further Studies .....	67
<b>REFERENCES.....</b>	<b>57</b>
<b>APPENDICES.....</b>	<b>70</b>
Appendix I: Letter of Introduction.....	70
Appendix II: Questionnaire .....	71
Appendix III: The Budget Schedule .....	77
Appendix IV: Time Plan.....	78

## LIST OF TABLES

Table 3.1: Target Population .....	34
Table 3.2: Sample Size .....	35
Table 4.1: Response Rate.....	38
Table 4.2: Gender of the Respondents.....	39
Table 4.3: Age of the Respondents.....	40
Table 4.4 Respondents' Duration of Work in the Company .....	40
Table 4.5 Level of Education.....	41
Table 4.6: Extent to which Technological Innovations affect Firm Performance.....	42
Table 4.7: Technological Innovations Used in the Bank.....	43
Table 4.8: Factors of Technological Innovations .....	44
Table 4.9: Extent to which Adoption of Technologies affect the Revenues of the Bank.....	44
Table 4.10: Types of Technological Innovations that affect the Revenues of the Bank .....	45
Table 4.11: Statements about the effects of Technological Innovations on the Performance.....	46
Table 4.12: Extent to which various Technologies affect the Market Shares of the Bank.....	47
Table 4.13: Aspects of Technological Innovations that affect the Market Share.....	47
Table 4.14: Influence of technological innovations on market share .....	48
Table 4.15: Extent to which Use of Technological Innovations affect Customer Satisfaction ...	50
Table 4.16: Aspects of Technological Innovations that affect Customer Satisfaction .....	50
Table 4.17: Technological Innovations and their effects on Customer Satisfaction .....	51
Table 4.18: Extent to which Technological Innovations affect Costs of Operations .....	52
Table 4.19: Aspects of Technological Innovations that affect Operating Costs of the Bank.....	53
Table 4.20: Effects of Technological Innovations on Costs Efficiency in the Bank.....	54
Table 4.21: Measures of Performance Resulting from Technological Innovations .....	55

KENYATTA UNIVERSITY LIBRARY  
MAIN CAMPUS

## LIST OF FIGURES

Figure 1.1: Organizational Structure .....	10
Figure 2.1: Perceived Relationship between Technological Innovations and Performance.....	30

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

An organization which is competing in fast changing markets with fast changing technology must make things happen, it must innovate. If it does not innovate it risks being overtaken by competitors. Sometimes a business underestimates the competitive challenges it faces. The risk of this happening is high when competitors react to potential challenges in much the same way (Abernathy and Utterback, 2005). In today's global and dynamic competitive environment, product innovation is becoming more and more relevant, mainly as a result of three major trends: intense international competition, fragmented and demanding markets, and diverse and rapidly changing technologies (Wilkinson, 2003).

Firms that offer products that are adapted to the needs and want of target customers and that market them faster and more efficiently than their competitors are in a better position to create a sustainable competitive advantage (Wang et al, 2003). Competitive advantage is increasingly derived from knowledge and technological skills and experience in the creation of new products (Yasuharu, 2003; Tidd, 2001). Banking institutions must play a catalytic function to develop technological innovation-driven economy. The experience of developed countries has evidently demonstrated that a shift of government's industrial policy-making towards a technological innovation-driven economic strategy is absolutely critical. Allegedly successful industrial policy performs an important function in fostering firms to inculcate a culture-based spirit of innovation and addresses firms' concerns in the realm of innovation pursuits (Goh, 2002).

#### 1.1.1 Technological Innovations

Technological innovation is used to refer to the process through which technological advances are produced (Goh, 2002). The innovation process includes a set of activities that contribute to

increase in the capacity to produce new goods and services (product innovations) or to implement new forms of production (process innovations). Therefore, the concept of technological innovation is associated with the idea of a flow – generation, application, dissemination – of technologies.

The words ‘technological innovations’ are usually used interchangeably in innovation process, such as: technological change, technical progress, technological development or simply innovation. Traditionally, industrial economists break down the process of technological innovation into a sequence consisting of three phases: invention, innovation and diffusion. Furthermore, in a great deal of research, due to the availability of statistical data on research and development (R&D) spending, technological innovation is identified with research (pure and applied) and technological development (Roehm and Sternthal, 2001).

The same terms have been used in management literature, when dealing with the technological innovation process. Recently, however, a change in orientation has taken place and other concepts are beginning to be used such as: “organizational learning” (Ayres, 2008), “knowledge creation”, “routine creation”, “asset accumulation”, “core competency development” and “dynamic capability development” (Teece *et al.*, 1997). All of these terms describe the flow of the generation of new knowledge within organizations, and therefore refer to phenomena that are analogous to the technological innovation process.

The concepts of learning and knowledge creation are often used to describe the innovation process: “Companies innovate through a constant learning process through which they generate new technological knowledge” (Nonaka and Takeuchi, 1995). Furthermore, it has been recognized that the innovation process in companies basically consists of the development of new routines, since “the conversion of an organization's activity into a routine constitutes the main form of storage of that organization's specific operational knowledge”. The innovation

process has also been associated with the creation of core competencies and with the development of dynamic capabilities.

Technological innovations have re-cultivated researcher interest towards the field of consumer innovation adoption (Yasuharu, 2003). Abernathy and Utterback (2005) classify innovations based on their impact on behavior and social structure into continuous, dynamically continuous, and discontinuous. Technological innovations are most likely to fall into the discontinuous innovation category (Moore, 1999) and can thus be regarded as knowledge intensive innovations. The knowledge needed for technological innovation comprehension is likely to be contingent upon the aspects of technology. According to Rogers (1995), technology consists both of software and a hardware component; the hardware aspect embodies the technology as a material or physical object (e.g. computers have hardware such as semiconductors and electric cables) and software is the information base used (e.g. coded commands and instructions and other information aspects). In many instances the software part of technology is less observable than the hardware part, but should nevertheless be taken into consideration when researching technology (Rogers, 1995). The hardware-software mixture present in technological innovations implies that consumers might need to combine their knowledge from several domains for complete innovation comprehension; i.e. according to Rogers' distinction both hardware and software knowledge would be needed.

### **1.1.2 Firm Performance**

Performance is the outcome of all of the organization's operations and strategies (Wheelen and Hunger, 2002). Firm's performance is the appraisal of prescribed indicators or standards of effectiveness, efficiency, and environmental accountability such as productivity, cycle time, regulatory compliance and waste reduction. Performance also refers to the metrics regarding how a certain request is handled, or the act of doing something effectively; of performing; using

knowledge as notable from just possessing it. It is the result of all of the organisation's operations and strategies (Venkatraman and Ramanujam, 2001). It is also the level to which an individual fulfils the expectations concerning how he should behave or function in a certain situation, context, circumstance or job. Oakland (1999) posited that performance is what individuals do relating to institutional roles.

Performance measurement systems offer the foundation to extend strategic plans, remunerate managers and review an institution's completion of objectives (Alderfer, 2003). Although evaluation of performance in the marketing literature is still very vital, it is also complicated (Andersen and Segars, 2001). Whilst consensual dimension of performance promotes scholarly assessments and can elucidate managerial decisions, those in marketing have not been able to find apparent, present and consistent measures of performance on which marketing merit could be establish (Manogran, 2001). Two methods have been adopted in the literature to determine financial performance. Longer term performance has been preferred for two reasons: firstly since that is what the customers of "retail" products for instance unit trusts might be likely to be examining particularly considering the charging arrangements which make shorter term investment imprudent. Secondly, one of the reasons of looking at "real" products rather than theoretical studies is how administrative costs give the results. In principle, such costs might appear in either front-end or regular annual management charges. Using five-year offer-to-bid figures should arrest such effects in spite of the choices of individual institutions as to how to split costs among the two types of charges.

The financial performance of companies is usually measured using a blend of financial ratios analysis, measuring performance alongside budget, benchmarking or a combination of these methodologies. The common postulation, which explains most of the financial performance discussion and research, is that increasing financial performance will result in improved

functions and actions of the firms. The topic of financial performance and investigation into its measurement is well advanced in management and finance fields. It can be argued that there are three principal factors to advance financial performance for financial firms; the institution size, the institution asset management, and the institution operational efficiency (Fitzgerald, Johnston, Brignall, Silvestro and Voss, 2000).

Performance measurement is usually carried out using a performance measurement system, which consists of several individual measures. There are many frameworks for constructing such a system. The most commonly used model is the Balanced Scorecard (BSC) (Lönqvist 2002, PMA 2001, Toivanen 2001). Others include, e.g. the Performance Prism and the Performance Pyramid (Neely and Adams 2000). The measures for the performance measurement system chosen are based on an organization's vision and strategy (e.g. Kaplan and Norton 1996). Measures are chosen to measure success factors from different points of view, such as that of the customer, employees, business processes and financial success, as well as from the point of view of past, current and future performance. This way, different aspects of an organisation's performance can be measured and managed.

### **1.1.3 Adoption of Technological Innovation and Performance**

Commercial banks in Kenya have developed new technological innovations that have influenced their performance. Developments in information and communication technology are radically changing the way business is done. These developments in technology have resulted in new delivery channels for banking products and services. These include mobile banking technologies, electronic money transfer, internet banking transactions, Automated Teller Machines (ATMs) deposits and withdrawals, online account opening, PC-Banking, and Electronic Funds Transfer at Point of Sale (EFTPoS) among others. All these technological innovations contribute heavily in

building customer base, capital base as well as enhancing their profitability which results to influence on their performance.

Rothwell, (1992b) argue that technology push is not enough because it can be constrained by the power of technological change in shaping the competitive dynamics of an industry. In other words, technology push is not stable because rapid technological changes create many alternatives from which firms choose their technology strategy. Nor does demand pull provide a complete explanation in circumstances where customers lack the necessary foresight of possibilities in a world with radically new products or systems. To say it the other way round, Hamel (2002) suggests that innovations come to be seen as a result of collaboration for integration of skills and capabilities when competing for the future market.

One important driver of organizational learning is experience with process technology. Organizational learning might be said to occur as an organization and its members build a knowledge base of action-outcome relationships relevant to its tasks and technologies (Tidd et al, 2001). These knowledge bases have been called technological knowledge. As technological knowledge bases become more complete through learning, knowledge is said to be mature. In developing his model of knowledge maturity focuses on what he calls technological knowledge.

Technological change has been described by technology push (Berger, 2003) and demand pull or their interaction as triggers of innovation. The theoretical analysis has moved towards the theory of technological innovation as an interaction within a network of companies identified in the Systems Integration and Networking (SIN) model (Rothwell, 1992). Technological knowledge can develop from complete ignorance to mature knowledge, as organization members experiment, encounter errors, draw inferences, and learn. When technological knowledge is immature, there will be many low cost occasions for learning that have significant returns. Organizations with immature technological knowledge learn rapidly and enjoy strong

productivity gains as they “harvest the low-hanging fruit”, while organizations with mature technological knowledge have to search more carefully for learning opportunities, work harder to exploit them and enjoy smaller returns to learning (Goh, 2002).

Chien and Danw (2004) showed in their study that most previous studies concerning company performance evaluation focus merely on operational efficiency and operational effectiveness which might directly influence the survival of a company. By using an innovative two-stage data envelopment analysis model in their study, the empirical result of this study is that a company with better efficiency does not always mean that it has better effectiveness. A paper in the title of efficiency, customer service and financing performance among Australian financial institutions Ayres, 2008) showed that all financial performance measures as interest margin, return on assets, and capital adequacy are positively correlated with customer service quality scores.

Further, banks regarded the increase in environmental attitudes in society as a business opportunity. They subsequently created specialized credit products and mortgages as well as ‘green’ or socially responsible funds, which invest in environmentally friendly or sustainable firms (Yasuharu, 2003). Technological innovations were introduced into the banks to enhance quality of services and products, efficiency and delivery. Technological innovations continue to take part in credit, risk prevention and control of funds in budgeting.

The Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK), govern the Banking industry in Kenya. There are forty-six banks and non-bank financial institutions, fifteen micro finance institutions and forty-eight foreign exchange bureaus in Kenya. Six of the major banks are listed on the Nairobi Stock Exchange. The commercial banks and non-banking financial institutions offer corporate and retail banking services but a small number, mainly comprising the larger banks, offer other services including investment banking.

The Kenyan Banking sector has demonstrated a solid growth over the past few years. The industry continues to offer significant profit opportunities for the major participants. Profit after tax of the overall banking system increased by 38.61%, or Kshs 5.08 billion, from Kshs 13.15 billion in December 2005 to Kshs 18.22 billion in December 2006. This growth is a continuation of the strong growth in profit after taxes that the industry has achieved for the past several years (Central Bank of Kenya, 2010). Key issues affecting the banking industry in Kenya include; changes in the regulatory framework, where liberalization exists but the market still continues to be restrictive, declining interest margins due to customer pressure leading to mergers and reorganizations, increased demand for non-traditional services including the automation of a large number of services and a move towards emphasis on the customer rather than the product and introduction of non-traditional players, who now offer financial services products.

Among the key trends is what appears to be the strong emergence of technology driven banking services in Kenya. Banking is edging away from over reliance on traditional banking halls to other platforms supported by technology and in particular telecommunications. This is emerging as threat to the banks because it has enabled non bank competitors like safaricom short circuit banks by offering cheap money transfer (Central Bank of Kenya, 2010). There is also an emerging strategy of the banks trying to curve out underexploited but potentially viable niches like mortgage financing, Islamic banking, SME banking among others. The distinction between the traditionally big banks and small banks is somewhat fading as far as product offering is concerned.

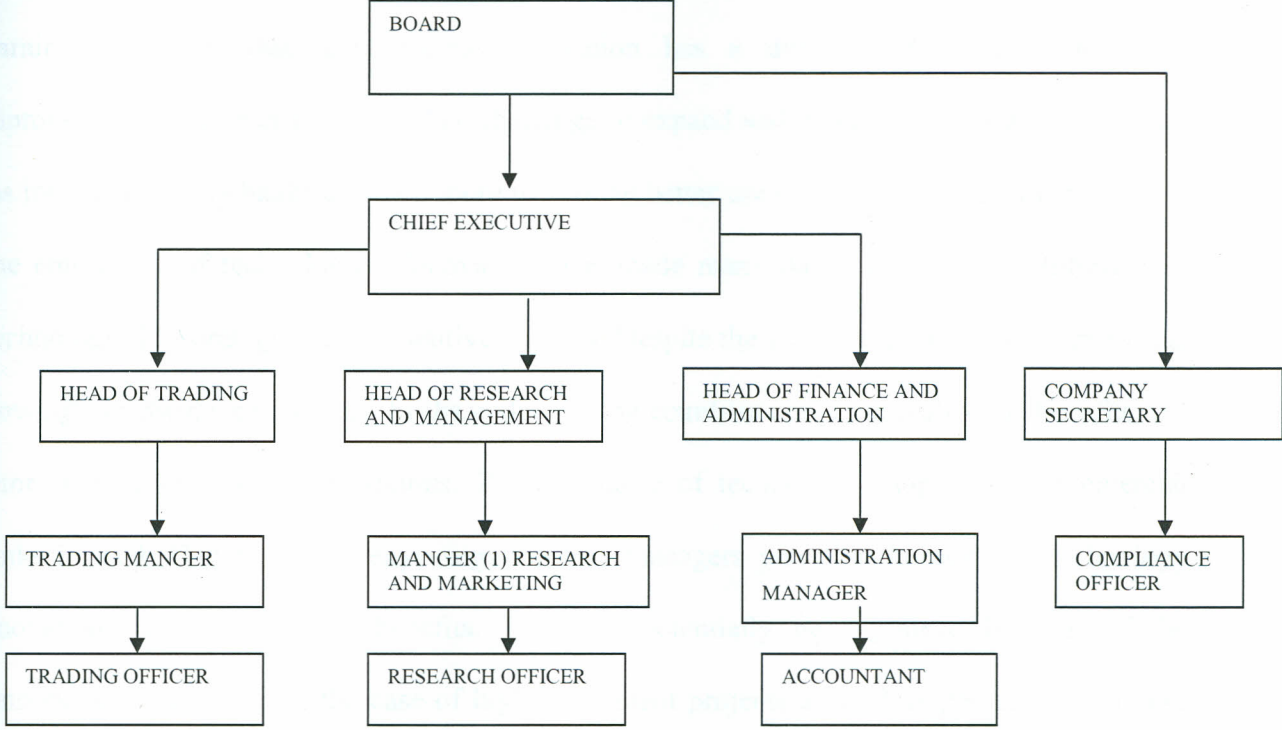
#### **1.1.4 Equity Bank Kenya Limited**

Equity Bank was first incorporated in 1984, as Equity Building Society. Later, Equity transformed into a microfinance institution and eventually into a commercial bank. Starting in 2008, Equity Bank started regional expansion by taking 100% shareholding in Uganda

Microfinance Limited (UML), a profitable microfinance institution with twenty-eight (28) full-service branches and fourteen (14) agency branches, for a share-acquisition deal valued at approximately US\$25.3 million. UML was renamed Equity Bank (Uganda) and started operating under the new name in April 2009.<sup>[9]</sup> Also in 2008, Equity Bank obtained regulatory approval to open a subsidiary in South Sudan and in November 2011, Equity Bank commenced operations in Rwanda, launching officially in February 2012. As of April 2012, the bank has one hundred and thirty five (135) branches in Kenya, thirty eight (38) in Uganda, seven (10) in Rwanda, four (4) in South Sudan and two (2) in Tanzania.(HELP ME SITE WIKEPEDIA)

In June 2009 Equity Bank was the emerging markets most sustainable bank of the year in Africa and the Middle East. Equity is the holder of the 2007 Global Vision Award in Microfinance "for initiating a concept of the future that will shape the Global Economy". The world renowned Super brands has recognized Equity as the only banking Super brand in East Africa in its first Super brand edition for East Africa in 2008. Equity Bank enjoys an A+ Credit rating from Global Credit Rating Agency. Equity Bank offers financial services through its wide network of Branches in Kenya, Uganda and Sudan supported by Alternate Delivery Channels. These Channels include: Visa branded ATM's in Kenya; Points of Sale (POS) where customers shop pay and withdraw cash in leading retail outlets; Internet and mobile banking channels. The Bank runs on a Global Robust State of the Art Information Technology Computer System supported by Infosys, HP, Oracle and Microsoft.

**Figure 1.1: Organizational Structure**



**Source: Equity Bank, (2011)**

**1.2 Statement of the problem**

Of notable importance in the banking sector is the growth of technological innovations, a development that came as a result of technological advancements. Technological advances come with several costs and effects to the society and bankers, while efficiency is aimed at maximizing output and eventually profitability, with a given set of resources. The role of technological innovations on efficiency and cost reductions in the banking sector is paramount to the successful and profitable service delivery in the sector. According to Yasuharu (2003) technological innovations play a significant role in improving the efficiency of the banking sector as well as reducing the costs of banking transactions for customers. The banking sector has, for the past decade, witnessed various improvements and new technologies with the main purpose of improving the service delivery of the banking sector.

A fundamental assumption of much recent research in operations improvement and operations learning has been that technological innovation has a direct bearing on performance improvements (Bijker et al, 2007). The challenge to expand and maintain banking market share has influenced many banks to invest more in making better use of the technological innovations. The emergence of technological innovations has made many banks rethink their Information Technology (IT) strategies in competitive markets. Despite the fact that technology acceptance is growing worldwide, commercial banks in developing countries are yet to realize the benefits that come with technological innovations. The reluctance of technology adoption by commercial banks in such Country like Kenya suggests that managers perceive the costs of technology innovations to outweigh the benefits. This can potentially be explained by fear of the consequences of failure in the case of high investment projects as well as perceived customer dissatisfaction.

Locally, Gitonga (2003) did a study on innovation processes and the perceived role of the CEO in the banking industry while Kihumba (2008), conducted a study on the determinants of financial innovation and its effects on banks performance in Kenya. These studies focused on financial innovation and innovation processes as a strategy and thus did not cover the effects of technological innovations on the performance of the commercial banks in Kenya. As such, to the best of the researcher's knowledge no study has ever documented the effects of technological innovations on the performance of Kenyan commercial banking industry and Equity Bank Limited in particular hence a research gap. This study focusing on technological innovations in developing countries was a modest attempt to bridge this gap. It was an effort to bring to light the influence and insights into effects of technological innovations on the performance of commercial banks in Kenya where Equity Bank Limited was the context of focus.

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

#### **1.3.1 General Objective**

The main objective of this study was to investigate the effects of technology on performance of Equity Bank.

#### **1.3.2 Specific Objectives**

Specific objectives of the study were:

- i. To establish the effect of technology on revenue of Equity Bank.
- ii. To examine how technology has affected market share of Equity Bank.
- iii. To find out the extent to which technology has affected customer satisfaction and retention at Equity Bank.
- iv. To establish the effect of technology on the cost/efficiency of Equity Bank

### **1.4 Research Questions**

This study strived to provide answers to the following research questions:

- i. What are the effects of technology on revenue of Equity Bank?
- ii. How does technology affect the market share of Equity Bank?
- iii. To what extent does technology affect customer satisfaction and retention at Equity Bank?
- iv. What are the effects of technology on the cost/efficiency of Equity Bank?

### **1.5 Significance of the Study**

A strong banking industry is important in every country and can have a significant affect in supporting economic development through efficient financial services. The emergence of information technology has made many banks rethink their strategies in competitive markets. Technology innovation would encourage ease of flow of information and fast delivery to the intended persons. From the background of this study, it is only those companies that are able to adapt to the changing environment and adopt new ideas and technological innovations in doing

business that can be guaranteed hope of survival. There was therefore dire need to investigate the effects of the technological innovations on the performance of organizations. This study focused on the commercial banks in Kenya as one of the industries that have advanced in technological innovations and Equity Bank Limited in particular thus realizing better performance.

### **1.5.1 Equity Bank and Other Commercial Banks in Kenya**

The findings of this study would be important to Equity Bank Limited and other commercial banks in Kenya as they would be able to know what technological innovations to use in order to remain competitive and effective in the banking industry.

### **1.5.2 The Central Bank of Kenya**

The Central Bank of Kenya would also find the results of this study very invaluable, as it would be able to ascertain the extent of competition in the industry and the technological innovation strategies that mitigate the effect of such competition to an individual firm and as so determine whether such technological innovations adopted in the industry conform to the guidelines provided for the industry by the government.

### **1.5.3 Academicians and Researchers**

The results of this study would also be invaluable to researchers and scholars, as it would form a basis for further research. The students and academics would use this study as a basis for discussions on the technological innovation strategies adopted by banking industry in Kenya and their effect on performance.

## **1.6 Scope of the Study**

The study was about the technological innovations in the commercial banks in Kenya. The study focused more on the effects of technological innovations on the performance of the commercial banks in Kenya. This study was limited to Equity Bank Limited in Kenya where special focus

was on the head offices in Nairobi. This involved collecting information from the heads of departments, assistant heads of departments and other lower cadre staffs like the supervisors, accounts and finance officers on the effects of technological innovations on the performance of Equity Bank Limited in Kenya. This was relevant in collecting the data required as time and distance are the limiting factors that inhibit collecting the data from all the commercial banks across the country.

**KENYATTA UNIVERSITY LIBRARY  
MAIN CAMPUS**

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter summarizes the information from other researchers who have carried out their research in the same field of study. The specific areas covered here are theoretical literature, Rogers' diffusion of innovation theory, implicit person theory, social-technical system theory, empirical review revenue, market share, customer satisfaction and retention, cost efficiency, conceptual framework and research gaps.

#### **2.2 Theoretical Literature**

##### **2.2.1 Rogers Innovation Diffusion Theory**

Rogers' Diffusion of Innovation Theory (Rogers, 1995) seeks to explain how new ideas or innovations are adopted, and this theory proposes that there are five attributes of an innovation that effect adoption: relative advantage, compatibility, complexity, trialability, and observability. Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. Rogers' theory suggests that innovations that have a clear, unambiguous advantage over the previous approach will be more easily adopted and implemented. Current research evidence indicates that if a potential user sees no relative advantage in using the innovation, it will not be adopted (Greenhalgh et al, 2004). Compatibility is the degree to which an innovation fits with the existing values, past experiences, and needs of potential adopters. There is strong direct research evidence suggesting that the more compatible the innovation is, the greater the likelihood of adoption (Greenhalgh et al, 2004). Complexity is the degree to which an innovation is perceived as difficult to understand and use.

Furthermore, Rogers suggested that new innovations may be categorized on a complexity-simplicity continuum with a qualification that the meaning (and therefore the relevance) of the

innovation may not be clearly understood by potential adopters. When key players perceive innovations as being simple to use the innovations will be more easily adopted (Greenhalgh et al, 2004). Trialability is the degree to which an innovation may be experimented with on a limited basis. Because new innovations require investing time, energy and resources, innovations that can be tried before being fully implemented are more readily adopted. And finally, observability is the degree to which the results of an innovation are visible to the adopters. If there are observable positive outcomes from the implementation of the innovation then the innovation is more adoptable.

### **2.2.2 Social-Technical System Theory of Information Technology**

Social-Technical System Theory proposes that a person's intention to perform behavior is the central determinant of that behavior because it reflects the level of motivation a person is willing to exert to perform the behavior (Ajzen, 1991). The theory has been largely used by researchers to understand a variety of health-related behaviors in various population groups. Eccles and colleagues (Forman, 2005) suggest that there is a predictable link between health care professionals' intention to engage in behavior and their subsequent behavior.

A fundamental tenet of socio-technical systems thinking is that a technology on its own (in the form of its technical capability) has little meaning for purposes of organizational analysis, being truly comprehensible only in terms of the context in which it is embedded and, by extension, the organizational goals or transformations that it serves or enables. Moving beyond a concern with one user and an interface, socio-technical systems theory argues that a network of social relationships surround all working practices (cooperation among workers over the course of a task, supervisory relationships, and general social interaction). The gainful employment of any technology hinges on the ability and willingness of users to employ it for worthwhile tasks (those deemed central to the organization's goals). Accordingly, any technology cannot be analyzed or

understood in isolation of the goal-oriented organization it is intended to support. In order to jointly optimize both the social and technical attributes of any organization, allowance must be taken at the engineering level of the social dynamics of any organization or sub-unit within it (Chern, 1994).

Socio-technical systems theory has given birth to a framework for technology design that emphasizes holistic job satisfaction (rather than just task performance) and user participation throughout the development process. Thus, socio-technical theorists recommend the analysis of all stakeholders, not just the direct users of a innovation, the formation of planning groups to oversee the design, the performance of prototyping exercises, and the analysis of likely impact the technology will have on the organization (Rogers, 1995). The intention of such a design process is to avoid unpleasant side effects in working practices and to ensure as much a social solution as a technical solution to the computing needs of an organization.

### **2.2.3 Implicit Person Theory**

A prototypical entity implicit theory assumes that personal attributes are largely a fixed entity, whereas an incremental implicit theory assumes that personal attributes are relatively malleable. Implicit theory research, conducted with children and students by educational and social psychologists (Kamins and Dweck, 1999), has focused largely on the motivational implications of holding a primarily entity or incremental implicit theory. Within an organizational context, several studies have examined how implicit theories of ability influence aspects of self-regulation including the goals that people set, their level of self-efficacy, the resilience of their self-efficacy following setbacks, and their performance on complex decision-making tasks. However, no published studies, to our knowledge, have examined the effect of managers' implicit theories on their judgments of others. Implicit theories can be domain specific, pertaining particularly to areas such as ability, morality, or personality.

### **2.2.4 Conventional Economic Efficiency Theory**

Conventional economic efficiency theory states that companies should structure their output to achieve the lowest possible cost per unit produced. Given the combination of fixed and variable costs typical in business, low levels of output are inefficient because fixed costs are shared out across a relatively small number of units. At the other extreme, although above-optimal production can in theory generate economies of scale, in practice, this apparent benefit is often more than offset by additional costs related to the overstressing of existing systems. In the short term, the point of maximum operational efficiency is achieved at the level of output at which all available economies of scale are taken advantage of, yet, short of the level at which the diseconomies of overstraining existing systems come into play. Over the longer term, however, the optimal level of productive efficiency can be raised by increasing the capacity of existing systems (Zerbe, 2001).

The second element of conventional economic efficiency theory relates to the way that existing resources are allocated. The logic is that high levels of competition among producers should prevent them from making excessive profits by raising their selling prices to an unreasonable level above their marginal costs. At the company level, maximum allocative efficiency is achieved when the firm produces the optimal output level of a combination of goods or services to maximize the benefit to the company as a whole. The theory takes account of the fact that company resources are finite and can be used only once, with the result that using a quantity of a material for one purpose involves an opportunity cost, that is, it denies the company the chance to use the same material for another purpose.

Allocative efficiency is achieved only when no other pattern of utilization of resources can deliver a better overall result in terms of the welfare of all interested parties. This point of maximum allocative efficiency, at which improvements in one aspect of usage can only be

achieved at the expense of losses elsewhere, is sometimes referred to as the Pareto optimal allocation of resources. The theory provides a basic framework to help understand the various factors that are associated with existing operating costs. An understanding of the main principles of the theory could provide scope for managers to find ways of making some elements of their business work more efficiently (Quinzi and Sujaya, 1993).

The theory encourages managers to take a “static” view of their business, with no regard to the possibilities offered by innovation. The rapid pace of technological development over recent years has highlighted this shortcoming in classic economic efficiency theory. Furthermore, the focus on the lowest possible cost can give an overly simplistic representation of the way businesses operate, although, the theory retains value in some low-technology and non-innovative manufacturing applications.

### **2.3 Empirical Review**

Technological innovation and the appropriate implementation of new technologies are a fundamental part of development process of all nations. The literature evidence reveals that successful technologies in each nation are those which rooted in their own indigenization efforts. Indigenous technological innovation can originate just as much from a re-invention of historical techniques or an adaptation of local technology as from advanced industrialized countries. Research on technological innovation, broadly defined, forms a huge body of research focused on problems of technology-based change in organizational and social settings (Rogers, 1995). The popularity of the technological innovation approach in IS research testifies to its usefulness. Theories of innovation have been used to explain the adoption patterns of information technologies ranging from personal computers and spreadsheets to business computing and inter-organizational systems such as electronic data interchange (Iacovou et al., 1995).

Technological innovation is fundamentally competitive and conflictual. Management researchers, sociologists, and economists all agree that, despite the need for cooperation in technology development and diffusion, technological innovation fundamentally takes place within a competitive and conflictual atmosphere. For the social shaping of technology theorists, different social groups are inevitably involved in technological innovation (Bijker et al, 2007), each with their own interpretation of what the technology is, and what problem it is trying to solve. For technological innovation to happen, networks of interest groups must be attracted into a new technological system, and their commitment to it preserved (Bijker et al, 2007). For the economists of innovation, technological innovations compete for scarce resources and have uncertain returns. Within the firm, each stage of the innovation process – expressing the idea, exploring the feasibility, building prototypes – can be seen as a separate hurdle where a number of ideas are in fierce competition with each other. Between firms, the rapidity of technological innovation puts organizations under severe pressure to innovate effectively (Rogers, 1995) and to maneuver strategically within their industries to establish commercially lucrative positions for themselves in the face of technological change (Austin, 2007).

Technological innovation is underdetermined – there is no single “best solution”. To state that technological innovation is underdetermined is to say that “technical principles are insufficient by themselves to determine design” (Goh, 2002). The research traditions mentioned above subscribe to the view that the “natural attributes” of technology are not sufficient to explain technological innovation, though they differ in the importance they attach to this belief. For the social shaping of technology theorists, the belief that technological innovation does not unfold according to some predetermined technical logic is critical (Yasuharu, 2003). The particular path that technological innovation takes is something to be explained, rather than simply adjusted to. Studies of the management of innovation, and innovation adoption, acknowledge that the seemingly “best” technology does not always become the most widely accepted (Wang et al,

2003). While the economists of innovation believe that technological “trajectories” make some innovation paths more likely than others, the complex interplay between technological supply and market demand cannot be captured strictly with reference to the characteristics of technology. Even in the literature on technology and organization structure, which has argued for the strongest links between the nature of technology and organizational forms, there is a recognition that technological change serves as an occasion for restructuring, and the same technology can occasion quite different organizational outcomes.

Technological innovation cycles between periods of stability and change. A wide range of technological innovation research suggests that the innovation process fluctuates between periods of relative stability and periods of relative change. Research on innovation and business strategy in particular has argued that the nature of innovation changes over time. Periods of more incremental innovation, in which technology appears to develop along well understood paths, are then abruptly followed by periods of more radical innovation, in which the certainties of the past era are abandoned (Wang et al, 2002; Yasuharu, 2003). Eventually, a radical innovation becomes more widely accepted, and settles back into relatively well understood incremental innovation. The economists of innovation refer to waves of change, in which the nature of technological innovation changes over the “lifecycle” of a technology (Wilkinson, 2003). The social shaping of technology theorists see the “firming up” of technology – the process of stabilizing interpretations and relationships around a technology – as one of the key processes to be explained (Bijker *et al.*, 2007). While technology can become more “closed” over time for the social shaping theorists, the contingency of social life ultimately works to reopen previous controversies and pursue new opportunities. Each of these three claims offers an alternative starting point for the investigation of information systems as technological innovation.

Technological progress has brought in the speedy processing and transmission of information, easy marketing of banking products, enhancement of customer access and awareness, wider banking networking and regional and global links on an unprecedented scale (Jayamaha, 2008:1). IT developments thus played a role in changing the product range, product development, service channels and type of banking services as well as the packaging of such services with significant efficiencies not only in the banks, but also in the ancillary services to banks. In this study, technological innovations in commercial banks are perceived to result into changes in revenues, market share, customer satisfaction and retention as well as cost efficiency in the banking industry.

### **2.3.1 Revenues**

Revenues are the income generated from a business' products and services before taxes and general expenses. Net income is left after all expenses and taxes are paid. Being involved in a variety of businesses, banks have diverse revenue streams. This variety helps yield positive financial results, which makes for a secure and stable banking sector that contributes significantly to a country's economy. Banks generally earn their revenues from taking in funds and lending them out at a higher rate. The reason for the maintenance of maximum level of competition among market participants is that competition is likely to enhance the achievement of high levels of market efficiency, especially, if it should cause the rationalization of the provision of financial services and the removal of restrictive practices that would impair trading in financial assets. Business models are a set of characteristics that describe how a business is going to operate, including research and development, marketing, product development, expenses and revenues.

An important source of growth for the banking sector is new business models—that is, ways of creating value that go beyond the company's traditional products and services. In the commercial

banking sector, the new value propositions can take different forms, including products that bring new annuity-based revenue streams, and bundled products and services that provide banking along with other services. Some of these business models have the potential to transform the industry. Innovations promise to create important new revenue streams for the bank while meeting a pressing need of millions of people. The technological innovations attract interest from customers to generate revenue streams and the sale of related products and services. Companies that have a more satisfied customer base also experience higher economic returns. High consumer satisfaction leads to greater customer loyalty which, in turn, leads to future revenue

Technological banking solutions offer a full range of benefits for financial institutions, ranging from reduced customer support costs to improved customer satisfaction and retention as well as revenue growth (Salzaman, Palen and Harper, 2001). Offering innovative, personalized mobile services can also assist banks to attract and retain customers. Mobile banking offers financial institutions the opportunity to target and acquire new customer segments that value mobility and real-time control of their finances, leading to increased customer growth and revenue (Pousttchi and Schurig, 2004; Lee et al, 2003). Regular introduction of highly-usable, compelling mobile services not only strengthens a bank's brand as innovative and future-oriented, it also offers numerous opportunities for tailored marketing and promotional campaigns to drive customer acquisition. Mobile Service Infrastructure simplifies the complexity surrounding disparate data, device diversity and network convergence, enabling companies to rapidly launch secure and reliable mobile solutions that leverage existing business assets and resources.

Corporate executives may doubt that poor people can become a profitable business opportunity, and that such a customer base can support rapidly growing new product lines and revenue generation. Business is not about looking at historical figures, nor about taking comfort from an attractive financial statement (Hart & Christensen, 2002). It is about identifying the sustainability

of the revenue streams, the long-term competitiveness of the company's products and understanding where every penny goes and making sure that it is adding value. Innovativeness is the degree to which an individual or organization is relatively earlier in adopting new ideas than other members of his social system. Innovativeness can be used to classify people into adopter categories because it is a continuous variable that can be partitioned into discrete categories that are mutually exclusive to exclude respondents from other categories, and can be derived from one classification principle Innovative new products form the basis of growth and profitability.

To achieve revenue growth, a company's leadership must align distribution and sales approaches with a central goal: responding to the complexities in distribution with agility, insight and integration – another way of demonstrating ease of doing business. Profit margins vary within any industry but are always measured by the difference between revenues and expenses and reflected on the income statement of a company. An established product in the marketplace can be tweaked or targeted to a different customer segment, as a strategy to earn more revenue for the firm. Diversification usually requires new skills, new techniques, and new facilities. As a result it almost invariably leads to physical and organizational changes in the structure of the business which represent a distinct break with past business experience. The matrix illustrates, in particular, that the element of risk increases the further the strategy moves away from known quantities - the existing product and the existing market. Grant (2000) argues that the Ansoff Matrix, despite its fame, is usually of limited value - although it does always offer a useful reminder of the options which are open.

### **2.3.2 Market Share**

Increasingly, technological tools and techniques that support the sales process fuel that advantage. Having those tools and seizing the growth opportunities they facilitate is crucial to companies that want to attain mind- and market-share. As well, product development is a real-

time phenomenon and speed-to-market, a decisive competitive strength. Tan and Teo (2000) note that the challenge to expand and maintain banking market share has influenced many banks to invest more in making better use of technological innovations. Companies that offer services and products that are adapted to the needs and wants of focus customers and that sell them faster and more professionally than their competitors are in a better situation to create a sustainable competitive advantage. Successful technology management is all about bringing a new concept to the market in the most efficient way. Commercial banks have adopted technological innovations in various ways which include ATM, M-Pesa as well as partnerships with several organizations. In this period of technological innovation they have experienced performance in aspects of market share.

Technological innovations have a positive impact on business performance by leading to a market share increase and/or cost reduction and, in turn, a profit rise. Market oriented enterprises deliver superior quality products to their customers while complying with ecological, health and safety standards as well as with legal norms. Accordingly, market orientation is expected to produce a significant positive impact on all analyzed effects of innovative activities. Sales has been proposed as the most important measure of business performance on which managers should focus (Schon 1998), and is a measure of firm performance that is often closely associated with the marketing function. Similarly, gross profit (sales revenue minus cost of selling) is an indicator of the firm's value chain, specifically measuring a firm's ability to convert inputs into valuable outputs (McAdam and McClelland; 2002).

The market in which an enterprise offers its products can be a predictor of the effects of innovative activities. Strengths and weaknesses of competitors, demands raised by consumers, legal regulations, as well as ecological, health and other standards, motivate enterprises to develop products taking into account the situation in a particular market. Enterprises often find

themselves having to modify their products sold on the international market, not only to achieve outstanding business performance and competitive advantage, but also to enter the market in the first place and to remain in it. Accordingly, the market range can have an impact on the effects of innovative activities. It is to be expected that the more present an enterprise is in the international market, the more oriented its innovation activities are towards improving product quality, ecological and health aspects, as well as towards complying with legal standards and various regulations.

### **2.3.3 Customer Satisfaction and Retention**

Customer satisfaction of services is one measure of relative advantage in the context of technological innovations in the banking industry. In e-commerce, Cameron (1999) highlighted the fact that the convenience of shopping at any time is important because customers see that they can save time spent contacting different organisations. Martin (1998) sums up the notion of convenience: "Despite security issues and a lack of industry standards, e-banking is the best way for smaller companies to combine convenience, top-tier financial service and cash management". He argues that small corporate businesses have been ignored in Internet banking activities. Julian and Ramaseshan (1994) point out the pressure in the competitive environment of retail banking to innovate and develop new ways to improve customer service. E-commerce plays a major role in the economy by enabling sellers and buyers to create economic value through exchange of information, goods/services, and payments and the importance of the customer relationship potential in e-commerce has been stressed by many authors (Bauer, Grether, & Leach, 2002; Romano & Fjermestad, 2003), and specifically in the banking industry (Durkin & Howcroft, 2003).

Customer trust in the electronic channel for delivering banking services relates to customer willingness to accept the risk by putting themselves into a vulnerable position. Keen (1997)

argues that in order to extend electronic customer/business relationships organisations need to address the issue of customer trust in this relationship. Kimery and McCord (2002) examined customer trust in technological innovations and argued that issues of security and reliability of businesses on the web were an important factor. In their study they identified three types of web assurances: privacy assurance – to assure that merchants disclose and comply with privacy policies, process assurance – to assure that merchants comply with business processes, and technology assurance – to assure that merchants employ secure and reliable technologies.

Sathye (1999) studied the adoption of Internet technology in the banking industry from the perspective of the Australian consumer. His study looked at factors that could influence the adoption of the Internet banking service in Australia and identified six key constructs: security of transactions; ease of use; awareness of Internet services and benefits; cost of services; resistance to change and accessibility of the Internet.

Vatanasombut et al. (2004) found that maintaining a customer is more challenging on the Internet, suggesting that the level of perceived customer loyalty affects business organizational success. They argued that the level of competition in e-commerce affects the likelihood of retaining customers in the long run. In their study, they identified three dimensions of customer loyalty: reduction in consumers' search costs; lower barrier to entry; and reduced distinctiveness of firms. Their focus, however, was on how perceived customer loyalty could affect business organizational success and they found that customers were more likely to deal with large organisations than small ones because of perceptions that these large organisations had the capability to offer better services.

In a study of customer contact personnel in retail banking services in Australia, Julian and Ramaseshan (1994) argued that to gain competitive advantage in a competitive banking industry, customer service is very important. They suggested that banks would need to address the issue of

retaining customers through good service so that the risk of switching banks could be minimized. Replacing lost customers would be very difficult and costly, they pointed out. Chiou (2004) examined the antecedents of consumer loyalty toward Internet service providers in Taiwan and found that perceived value and trust is a major determinant of loyalty.

Jabnoun and Al-Tamimi (2003) examined perceived services quality in the commercial banks in the United Arab Emirates, emphasizing the importance of service quality to maintain market share. From an analysis of 462 responses to a survey of bank customers they concluded that customers value human skills the most in service quality. Other authors (Kotler, 2000; McKenzie, 2001) emphasized the importance of quality of service in customer satisfaction. Kotler (2000) highlighted the fact that timely service delivery is important when considering quality of service. Ennew and Binks (1999) also examined customer satisfaction in the banking industry and found that service quality is important.

#### **2.3.4 Cost efficiency**

One major operations objective, especially where companies compete with prices is cost. Low price is a universal attractive objective to customers, which can be achieved by producing goods or services at lower costs. By using and improving quality, speed, dependability, flexibility and cost operations performance, the bank will have a global growth and high percentage of customer satisfaction. A number of concepts can be used to explain efficiency in different contexts. Qayyum and Khan (2007:5) suggest efficiency as being the ratio output per unit input in which case they suggested that efficiency is decomposed into two components namely, allocative (economic) and technical efficiency. A firm is said to be technically more efficient than another firm if it can produce more output using a given amount of inputs as compared to another firm (Qayyum and Khan, 2007:5). It is suggested that the banks that fail to respond to

the emergence of technological innovation in the market are likely to lose customers and that the cost of offering technological innovation services is less than the cost of keeping branch banking.

Jasimuddin (2004) indicated that the majority of Saudi banks had taken advantage of Internet technology to establish web sites but few offered Internet banking services. He suggested that if the Saudi Arabian banking industry wished to be successful in the global economy it would need to integrate Internet technology into its banking strategy. If Internet technology could improve performance then the bank would be able to gain advantage in a competitive environment. Technological innovation has the potential to affect performance in terms of cost efficiency. King and Teo (1996) note that firms that made innovative use of IT gained a favorable image and hence increased their value in the industry more than those firms that did not do so. This suggests that a bank has a chance to improve its image in this way. This notion is also supported by Joseph et al. (1999) who claimed that banks could improve their image in the industry through technological innovation.

Tan and Teo (2000) note that technological innovations gives customers greater control over the management of their finances. They associate management of banking services with perceived relative advantage and conclude that better management of banking services is an advantage for banks in the industry. Joseph et al. (1999) highlight the importance of management of banking services from the perspective of the banks, suggesting that monitoring of customers' feedback and complaints on a regular basis would ensure better management of banking services.

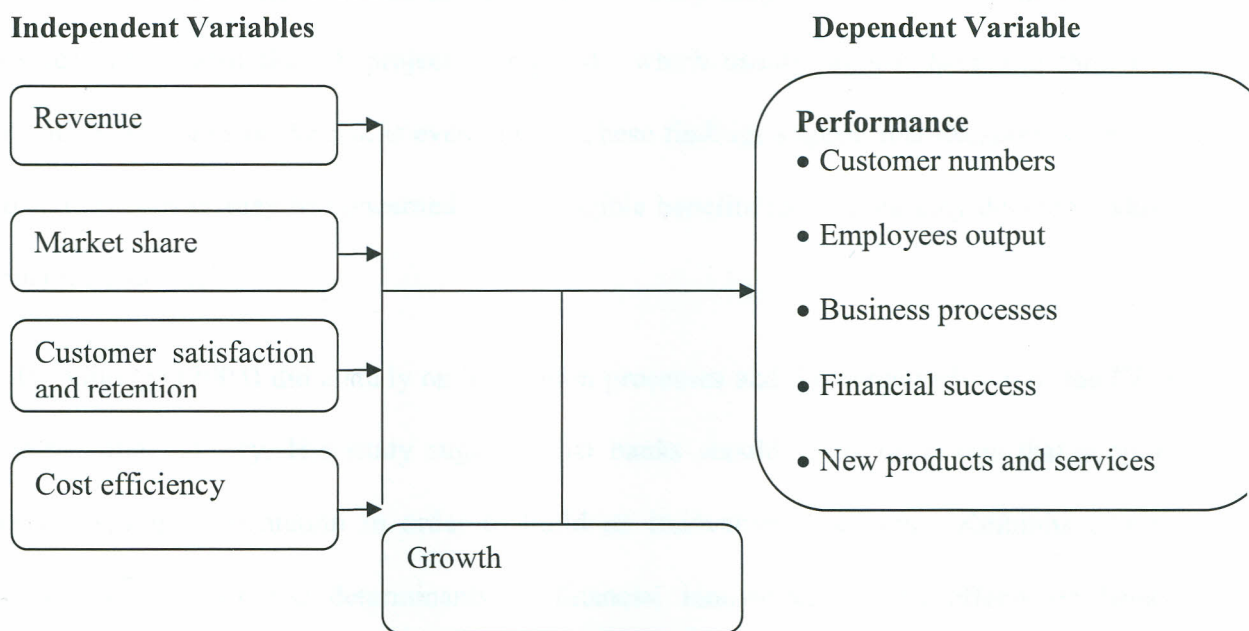
Bhuiyan (1997) examined the relationship between market orientation and banks' performance in Saudi Arabia. He argued that unlike most developed countries, developing countries are experiencing rapid growth in markets and that this growth would probably continue until markets mature and become competitive. As with any method of analysis designed to measure business performance, there are limitations and imperfections associated with the use of financial ratios,

particularly the use of very few ratios in isolation (Goh, 2003). Hence this research endeavors to bring together several performance measures, financial ratios, and linear programming techniques and investigate the interplay between them rather than focusing on any individual measure in isolation. Simply stated, much of the current bank performance literature describes the objective of financial institutions as that of earning acceptable returns and minimizing the risks taken to earn this return. There is a generally accepted relationship between risk and return, that is, the higher the risk the higher the expected return. Therefore, traditional measures of bank performance have measured both risks and returns.

## 2.4 Conceptual Framework

The schematic diagram below shows the relationship between the independent and dependent variables. The adoption of technological innovations result to a change in revenues, market share, customer satisfaction and retention as well as cost efficiency in the banking industry.

**Figure 2.2: Perceived Relationship between Technological Innovations and Performance**



## Multiple Regression Model

According to Wisner (2012), multiple regression analysis is a technique used to establish the relationship between quantifiable variables in which data on dependent and independent variables is plotted on a scatter graph or diagram and trends are indicated through a line of best fit, using two or more independent variables.

$$i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_p X_{ip} + u_{i4} \quad i = 1, 2, 3, \dots, n$$

## 2.5 Research Gaps

Lim et al. (2004) conducted a meta-analysis study on the relationship between IT investment and organizational performance, noting that previous studies examining IT investments return have shown inconclusive results. From an analysis of 3,883 subjects obtained from prior studies, they found strong support for return on IT investments. Examining the relationship between the e-commerce adoption and organizational performance, another study (Scupola, 2002) found that cost is not an important factor in the e-commerce adoption decision. A study by Anandarjan et al. (2000) highlighted that business organizations focus on IT in order to improve performance, and argued that business organizations are not getting what they expect from IT investments. Moreover, they added that IT projects carry risks which usually appear later and that in a competitive environment the risk is even higher. These findings suggest that decision makers in the banking industry may be concerned about tangible benefits/costs when they decide to adopt Internet technology.

Locally, Gitonga (2003) did a study on innovation processes and the perceived role of the CEO in the banking industry. His study suggests that banks should focus on norms that support creativity and implementation in order to build an innovative processes. Kihumba (2008) conducted a study on the determinants of financial innovation and its effects on banks performance in Kenya. This study concluded that technological innovations influence the structural aspects of banks in Kenya particularly on financial innovation as a strategy. Use of

various aspects of technological innovations is thus expected to have great effects on the financial performance of an organization.

As such, technological innovations have been widely adopted in the commercial banks. There is, however, need to investigate the specific effects of these technological innovations in the commercial banks with a specific reference on Equity Bank. This is due to the research gap that exists as no study has been done to investigate the effects of technological innovations on performance of Equity Bank despite its strategic positioning to adopt technological innovations. The available literature provided insights on how different technological innovations are adopted in different contexts. Due to contextual, sector, and managerial differences among the organizations issues of technological effects on performance gained from these studies may not be assumed to explain the relationship between technological innovations and performance of Equity Bank. It is in this light that the researcher carries out a study on the relationship between technological innovations and performance of Equity Bank in Kenya.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

In this chapter the research methodology to be used in the study was described. The geographical area where the study was conducted, the study design and the population and the sample are described.

### **3.2 Research Design**

This study used a descriptive research design. This is used "to describe systematically the facts and characteristics of a given population or area of interest, factually and accurately" (Isaac & Michael, 1977, p. 18). In this case, the research problem was technological innovations and its effects on the financial performance of commercial banks in Kenya, a case of Equity Bank Limited. The research aimed at understanding the variables of technological innovations and its outcomes on the performance of the Kenyan commercial banks and specifically on Equity Bank. Descriptive research is more rigid than other research designs and seeks to describe uses of a product, determine the proportion of the population that uses a product, or predict future demand for a product. A descriptive research should define questions, people surveyed, and the method of analysis prior to beginning data collection. Thus, this approach was appropriate for this study, since the researcher intended to collect detailed information through descriptions and is useful for identifying variables and hypothetical constructs.

### **3.3 Target Population**

Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics. According to Ngechu (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated. The target

respondents included the 191 departmental heads, assistant departmental heads and lower cadre staffs like the supervisors, accounts and finance officers from the head offices of the Bank. In order to obtain views aimed at investigating the effects of technological innovations on the performance these staffs were selected from the headquarters of Equity Bank Limited and administered with the questionnaire. Mugenda and Mugenda, (2003), explain that the target population should have some observable characteristics, to which the researcher intends to generalize the results of the study. The population characteristic was as summarized in table 3.1.

**Table 3.1: Target Population**

<b>Sections</b>	<b>Population</b>	<b>Percentage</b>
Departmental heads	21	11
Assistant Departmental heads	59	31
Lower management	111	58
<b>Total</b>	<b>191</b>	<b>100</b>

**Source: Equity Bank Limited (2011)**

### 3.4 Sample Population

The sampling plan describes how the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample will be selected (Cooper & Schindler, 2003). Sample of responding staffs were drawn from 161 staffs working at the Banks' Headquarter in Nairobi where stratified random sampling technique was used.

Cooper and Schindler (2003) argue that if well chosen, samples of about 10% of a population can often give good reliability. Stratified random sampling technique was used since population of interest is not homogeneous and could be subdivided into groups or strata to obtain a representative sample. The study selected a section and particularly the staffs who included

departmental heads, assistant departmental heads and lower cadre staffs like the supervisors, accounts and finance officers from the Bank since they were the ones conversant with the effects of technological innovations on performance. From the above population of one hundred and sixty one, a sample of 25% was selected from within each group in proportions that each group bears to the study population. This generated a sample of 48 respondents which the study sought information from. This made it easier to get adequate and accurate information necessary for the research. The selection was as follows.

**Table 3.2: Sample Size**

Sections	Population (Frequency)	Sample Ratio	Sample
Departmental heads	21	0.25	5
Assistant Departmental heads	59	0.25	15
Low management	111	0.25	28
Total	191		48

**Source: Author, 2012**

### 3.5 Instrumentation

The study used of a survey questionnaire administered to each member of the sample population. The questionnaire had both open and close-ended questions. The close-ended questions provided more structured responses to facilitate tangible recommendations. The closed ended questions were used to test the rating of various attributes and this helps in reducing the number of related responses in order to obtain more varied responses. The open-ended questions provided additional information that may not have been captured in the close-ended questions. The questionnaire was carefully designed and tested with a few members of the population for further improvements. This was done in order to enhance its validity and accuracy of data to be collected for the study.

### **3.6 Data Collection**

The researcher administered the questionnaire individually to all respondents of the study. The researcher exercised care and control to ensure all questionnaires issued to the respondents were received and achieve this, the researcher maintained a register of questionnaires, which were sent, and which were received. The questionnaire was administered using a drop and pick later method.

Secondary data was also collected for this study. This data was useful for generating additional information for the study from already documented data or available reports. Cooper and Schindler (2003) further explain that secondary data is a useful quantitative technique for evaluating historical or contemporary confidential or public records, reports, government documents and opinions.

### **3.7 Data Analysis and Presentation**

Before processing the responses, the completed questionnaires were edited for completeness and consistency. Quantitative data collected was analyzed by the use of descriptive statistics using Statistical Package for Social Sciences (SPSS) and presented through percentages, means, standard deviations and frequencies. This was done by tallying up responses, computing percentages of variations in response as well as describing and interpreting the data in line with the study objectives and assumptions through use of SPSS. The information was displayed by use of tables, bar charts, graphs and pie charts and in prose-form. Tables and other graphical presentations as appropriate were used to present the data collected for ease of understanding and analysis.

### **3.8 Limitation of the Study**

The researcher was likely to encounter various limitations that might have hindered access to information sought by the study. The main limitation of study was its inability to include more

commercial banks in the Country. This was a study focusing on Equity Bank Limited. The study could have covered more commercial banks across country so as to provide a more broad based analysis. The researcher countered this problem by carrying a study across the departments in the Head Office of Equity Bank in Nairobi which is the head quarter of the Bank and serve as a representative.

The respondents approached were likely to be reluctant in giving information fearing that the information sought would be used to intimidate them or print a negative image about them or the Bank. The researcher handled the problem by carrying an introduction letter from the University and assured them that the information they gave would be treated confidentially and it would be used purely for academic purposes.

Although the results can be considered statistically significant in most parts, the study was faced with a limitation of incorporating only the firms in the banking sector. The study was based on Equity bank head office in Nairobi. It would be interesting to see how the results would be if the sample included other financial institutions in other areas as well as rural settings in the country. Thus future replication of the study incorporating other areas would be eligible.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

The purpose of this research was to investigate the role of technological innovations on performance of organizations within the banking industry in Kenya with a specific reference to Equity Bank Limited. Having identified the problem of study in chapter one, reviewed existing literature and shown gaps of knowledge in chapter two, chapter three explained the methods that the study used to collect data. This chapter presents analysis and findings of the study as set out in the research methodology. The results are presented on the role of technological innovations on performance of Equity Bank Limited. The data was gathered exclusively from questionnaire as the research instrument. The questionnaire was designed in line with the objectives of the study.

#### 4.2 Response Rate

The study sampled 48 respondents from the target population in collecting data with regard to role of technological innovations on performance of organizations within the banking industry in Kenya where the focus was on Equity Bank Limited. The results on the response rates are as shown in table 4.1 below.

**Table 4.3: Response Rate**

<b>Response Rate</b>	<b>Frequency</b>	<b>Percentage</b>
No Response	8	17
Response	40	83
Total	48	100

**Source: Author, (2012)**

From the study, 40 out of 48 sample respondents filled in and returned the questionnaire contributing to 83%. This commendable response rate was made a reality after the researcher made personal calls and visits to remind the respondent to fill-in and return the questionnaires. This response rate further can be said to be representative and therefore conclusions drawn from the results have a relatively high validity in relation to the target population.

### 4.3 Background Information

#### 4.3.1 Gender Analysis

The research sought to find out the gender distribution of the respondents. An analysis of the gender ratings on the returned questionnaires were as follows.

**Table 4.4: Gender of the Respondents**

Gender	Frequency	Percentage
Male	22	56
Female	18	44
Total	40	100

**Source: Author, 2012**

Accordingly, 56% of the employees were male while 44% were female. It can be concluded that the majority of the respondents in the organization were male. The findings show that Equity Bank Limited Kenya has a relatively equal number of both male and female staffs. This means that the decisions made in the organization are gender sensitive and hence are likely to be supported by all.

### 4.3.2 Age of the Respondents

Table 4.3 below shows the results of the findings on the age brackets of the respondents.

**Table 4.5: Age of the Respondents**

Age bracket	Frequency	Percentage
18-24	4	9
25-30	7	18
31-34	7	17
41-44	12	29
45-50	4	11
over 51	6	16
<b>Total</b>	<b>40</b>	<b>100</b>

**Source: Author, 2012**

From table 4.3, most of the respondents were aged between 41 to 45 years as shown by 29%, 18% were aged between 25 to 30 years, 17% were aged between 31 to 34 years, 16% were aged over 51 years, 11% were aged between 45 to 50 years, whereas 9% were aged between 18 to 24 years. This shows that respondents were well distributed in terms of age and that they are active in technological advancements, productivity and hence can contribute constructively in technological innovations and hence organizational performance.

### 4.3.3 Duration of Working in the Bank

The respondents were required to indicate the length of time they had worked in the bank.

**Table 4.6 Respondents' Duration of Work in the Company**

Duration	Frequency	Percentage
0-5 yrs	8	20.8
5-10 yrs	12	29.2
10-15	20	50.0
<b>Total</b>	<b>40</b>	<b>100.0</b>

**Source: Author, 2012**

On the respondents' duration of work in Equity Bank Limited, the study found that half (50%) of the respondents had worked in the Bank for 10 to 15 years, 29.2% of them had been working in Equity Bank Limited for 5 to 10 years, while 20.8% indicated for 0 to 5 years. This shows that majority of the respondents had enough experience on the issue of the role of technological innovations on the performance of Equity Bank Limited and that the information they gave is credible to what the study sought.

#### 4.3.4 Highest Academic Qualification

The study sought to establish the highest academic qualifications attained by the respondents.

**Table 4.7 Level of Education**

Level of Education	Frequency	Percent
Diploma	8	20
Bachelors/ Undergraduate degree	22	56
Masters	8	20
Other (e.g. PhD, Higher National Diploma)	2	4
<b>Total</b>	<b>40</b>	<b>100</b>

**Source: Author, 2012**

The study results reveal that majority 56% of the respondents had acquired a Bachelor's or undergraduate degrees level of education, 20% of the respondents indicated that they had acquired a diploma, another 20% of the respondents indicated that they had acquired Masters degrees level of education while 4% of the respondents indicated that they had acquired other academic qualifications such as PhDs, Higher National Diplomas and other international certificates. This results imply that majority of the respondents had at least an undergraduate degree and hence understood the information sought by this study.

#### 4.4 Role of Technological Innovations on Firm Performance

The study sought to establish the extent to which various technological innovations adopted by the bank affect its performance.

**Table 4.8: Extent to which Technological Innovations affect Firm Performance**

<b>Extent</b>	<b>Frequency</b>	<b>Percent</b>
To a very great extent	2	4.9
To a great extent	12	29.4
To a moderate extent	23	56.9
To a little extent	4	8.8
<b>Total</b>	<b>40</b>	<b>100</b>

**Source: Author, 2012**

From the study, 56.9% of the respondents indicated that various technological innovations adopted by the bank affected its performance to a moderate extent, 29.4% of the respondents indicated to a great extent, 8.8% of the respondents indicated that various technological innovations adopted affected the performance of the bank to a little extent, while 4.9% of the respondents indicated that r technological innovations adopted affected its performance to a very great extent.

The study was interested to establish the extent to which the bank make use of various technological innovations in its operations. As such a scale of 1 to 5 where 1 is to no extent and 5 is to a very great extent.

**Table 4.9: Technological Innovations Used in the Bank**

<b>Technological innovation</b>	<b>No extent</b>	<b>Little extent</b>	<b>Moderate Extent</b>	<b>Great extent</b>	<b>Very great extent</b>	<b>Mean</b>	<b>Std. Dev.</b>
Mobile banking technologies	3.8	5.3	27.8	18	45.1	3.95	1.13
Electronic money transfer	12.5	12.5	18.8	18.8	37.5	3.37	1.20
Internet banking transactions	2.1	16.7	10.4	60.4	8.3	3.62	1.00
ATM deposits and withdrawals	0	0	54.2	41.7	4.2	3.50	.58
Online account opening	6.3	12.5	18.8	31.3	31.3	3.68	1.25

**Source: Author, 2012**

According to the results, majority of the respondents indicated that mobile banking technologies are used in the Bank's operations to a great extent as shown by a mean score of 3.95, online account opening is used to a great extent as shown by a mean score of 3.68, as well as internet banking transactions shown by a mean score of 3.62 and ATM deposits and withdrawals shown by a mean score of 3.50, while electronic money transfer is used in the Bank's operations to a moderate extent as shown by a mean score of 3.37.

The study posed a statement that technological innovation is considered as a process which is science, technology and system based. In the light of this statement, the respondents were requested to rate the extents to which various factors of technological innovations form the bank's technological system.

**Table 4.10: Factors of Technological Innovations**

Factors of technological innovations	No extent	Little extent	Moderate Extent	Great extent	Very great extent	Mean	Std. Dev.
Internal capabilities	11.3	0	18.8	20.3	49.6	3.9699	1.30813
Networking	7.5	0	13.5	34.6	44.4	4.1579	0.92803
Technological learning ability	0	0	12	26.3	61.7	4.4962	0.70307
Environmental factors	3.8	15.8	4.5	13.5	62.4	4.1504	1.27622

**Source: Author, 2012**

From the study, majority of the respondents indicated that technological learning ability forms the bank's technological system to a great extent as shown by a mean score of 4.4962, as well as others like networking shown by a mean score of 4.1579, environmental factors shown by 62.4% and internal capabilities shown by a mean score of 3.9699.

#### 4.5 Effect of Technology on Revenues

The study sought to establish the extent to which the adoption of various technologies affects the revenues of the bank.

**Table 4.11: Extent to which Adoption of Technologies affect the Revenues of the Bank**

Extent	Frequency	Percent
Little extent	9	21.3
moderate extent	8	19.7
Great extent	9	23.0
Very great extent	14	36.1
<b>Total</b>	<b>40</b>	<b>100.0</b>

**Source: Author, 2012**

From the results, majority (36.1%) of the respondents indicated that adoption of various technologies affects the revenues of the Bank to a very great extent, 23.0% of them indicated to a great extent, 21.3% of the respondents indicated that adoption of various technologies affects the

revenues of the Bank to a little extent, while 19.7% of the respondents indicated to a moderate extent.

The study sought to establish the extent to which various types of technological innovations affect the revenues of the Bank.

**Table 4.12: Types of Technological Innovations that affect the Revenues of the Bank**

<b>Technological Innovations that affect the revenues of the Bank</b>	<b>No extent</b>	<b>Little extent</b>	<b>Moderate Extent</b>	<b>Great extent</b>	<b>Very great extent</b>	<b>Mean</b>	<b>Std. Dev.</b>
Mobile banking technologies	4	7	44	26	19	3.92	0.675
Electronic money transfer	0	7	15	37	33	4.04	0.808
Internet banking transactions	0	11	22	44	30	4.02	0.843
Automated Teller Machines (ATMS) deposits and withdrawals	4	4	7	48	37	4.21	0.631
Online account opening	0	11	15	56	19	3.77	1.059
Pc-banking	6	13	19	31	31	3.68	1.25
Electronic Funds Transfer at Point of Sale (EFTPOS)	2	27	7	41	23	3.55	1.18

**Source: Author, 2012**

Majority of the respondents indicated that Automated Teller Machines (ATMS) deposits and withdrawals affects the revenues of the Bank to a great extent as shown by a mean score of 4.21, Electronic money transfer affects the revenues of the Bank to a great extent as shown by a mean score of 4.04, Internet banking transactions affects the revenues of the Bank to a great extent as shown by a mean score of 4.02, Mobile banking technologies affects the revenues of the Bank to a great extent as shown by a mean score of 3.92, Online account opening affects the revenues of the Bank to a great extent as shown by a mean score of 3.77, Pc-banking affects the revenues of the Bank to a great extent as shown by a mean score of 3.68 as well as Electronic Funds Transfer at Point of Sale (EFTPOS) affects the revenues of the Bank to a great extent as shown by a mean score of 3.55.

The study sought the respondents' level of agreement with the various statements about the effects of technological innovations on the revenues of the Bank.

**Table 4.13: Statements about the effects of Technological Innovations on the Performance**

Statements about the effects of technological innovations on the performance	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Dev.
Technological innovations attract interest from customers to generate revenue streams and the sale of related products and services	4.2	8.3	29.2	54.2	4.2	3.46	0.88
Technological innovations lead to more satisfied customer base hence higher economic returns	0	0	54.2	41.7	4.2	3.50	0.58
Technological banking solutions offer reduced customer support costs as well as revenue growth	6.3	12.5	18.8	31.3	31.3	3.68	1.25
Innovative, personalized mobile services also assist banks to attract and retain customers	2.3	27.1	6.8	41.4	22.6	3.54	1.17
Mobile banking offers the Bank with opportunity to target and acquire new customer segments leading to increased customer growth and revenue	0	4.2	45.8	37.5	12.5	3.58	0.77

**Source: Author, 2012**

According to the study the respondents indicated agreement that technological banking solutions offer reduced customer support costs as well as revenue growth as shown by a mean score of 3.68, mobile banking offers the bank with opportunity to target and acquire new customer segments leading to increased customer growth and revenue as shown by a mean score of 3.58, innovative, personalized mobile services also assist banks to attract and retain customers as shown by a mean score of 3.54 and technological innovations lead to more satisfied customer base hence higher economic returns as shown by a mean score of 3.50, while they remained neutral that technological innovations attract interest from customers to generate revenue streams and the sale of related products and services as shown by a mean score of 3.46.

#### 4.6 Effects of Technology on Market Share

Technological innovations also affect the market shares of the bank. As such the study sought to establish the extent to which various technologies affect the market shares of the Bank.

**Table 4.14: Extent to which various Technologies affect the Market Shares of the Bank**

Extents	Frequency	Percent
To a very great extent	2	5
To a great extent	12	29
To a moderate extent	23	57
To a little extent	4	9
<b>Total</b>	<b>40</b>	<b>100</b>

**Source: Author, 2012**

From the study, 57% of the respondents indicated that various technologies affect the market shares of the Bank to a moderate extent, 29% of the respondents indicated to a great extent, 9% of them indicated to a little extent, while 5% of the respondents indicated that various technologies affect the market shares of the Bank to a very great extent.

The study sought to establish the extent to which various aspects of technology affect the market share of the Bank. A scale of 1 to 5 where 1 is to no extent and 5 is to a very great extent was provided.

**Table 4.15: Aspects of Technological Innovations that affect the Market Share**

Aspects of technological innovations that affect the market share	No extent	Little extent	Moderate extent	Large extent	Very large extent	Mean	Std dev
Efficient service delivery	6	13	19	31	31	3.69	1.25
Product development	2	27	7	41	23	3.55	1.18
Competitive strength	10.5	0	14.3	51.9	23.3	3.77	1.13
Partnerships with several organizations	6.3	0	25	25	43.8	3.56	1.45
Customer security	3.8	5.3	27.8	18	45.1	3.95	1.13
Convenient locations	0	4.2	45.8	37.5	12.5	3.58	.775

**Source: Author, 2012**

Majority of the respondents reiterated that the various aspects of technological innovations that affect the market share of the Bank include customer security to a great extent as shown by a mean score of 3.95, competitive strength to a great extent as shown by a mean score of 3.77, efficient service delivery to a great extent as shown by a mean score of 3.69, convenient locations to a great extent as shown by a mean score of 3.58, partnerships with several organizations to a great extent as shown by a mean score of 3.56 and product development to a great extent as shown by a mean score of 3.55.

The respondents were requested to indicate their level of agreement with various statements about influence of technology on market share of Equity Bank Limited.

**Table 4.16: Influence of technological innovations on market share**

Influence of technological innovations on market share	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Dev.
Technological innovations have a positive impact on business performance by leading to a market share increase	11.3	0	18.8	20.3	49.6	3.96	1.308
The need to expand and maintain banking market share has influenced the bank to invest more in making better use of technological innovations	7.5	0	13.5	34.6	44.4	4.15	0.928
Technological tools and techniques that support the sales process increases market reach	0	0	12	26.3	61.7	4.49	0.703
Product and service development is a speed-to-market a decisive competitive strength	3.8	15.8	4.5	13.5	62.4	4.15	1.276
Technological innovations ensure that the bank offer services and products that are adapted to the needs and wants of focus customers	18.8	10.4	35.4	35.4	33.3	3.29	1.610
Through use of technology the bank is able to offer services professionally than its competitors in a better situation to create a sustainable competitive advantage	29.2	43.8	8.3	8.3	10.4	3.54	1.515

**Source: Author, 2012**

Majority of the respondents agreed that technological tools and techniques that support the sales process increases market reach as shown by a mean score of 4.49, the need to expand and maintain banking market share has influenced the bank to invest more in making better use of technological innovations as shown by a mean score of 4.15, product and service development is a speed-to-market a decisive competitive strength as shown by a mean score of 4.15, technological innovations have a positive impact on business performance by leading to a market share increase as shown by a mean score of 3.96 and that through use of technology the bank is able to offer services professionally than its competitors in a better situation to create a

sustainable competitive advantage as shown by a mean score of 3.54. They however remained neutral on that technological innovations ensure that the bank offer services and products that are adapted to the needs and wants of focus customers as shown by a mean score of 3.29.

#### 4.7 Effects of Technology on Customer Satisfaction and Retention

The study required the respondents to rate the extent to which use of technological innovations affect customer satisfaction in Equity Bank Limited.

**Table 4.17: Extent to which Use of Technological Innovations affect Customer Satisfaction**

Extent	Frequency	Percent
Very great extent	4	9.8
Great extent	14	36.1
Moderate extent	8	19.7
Little extent	12	31.1
Not at all	1	3.3
<b>Total</b>	<b>40</b>	<b>100.0</b>

**Source: Author, 2012**

Majority of the respondents (36.1%) indicated that use of technological innovations affect customer satisfaction in the Bank to a great extent, 31.1% of them indicated to a little extent, 19.7% of the respondents indicated to a moderate extent, another 9.8% of the respondents indicated that use of technological innovations affect customer satisfaction in Equity Bank Limited to a very great extent, while 3.3% indicated that use of technological innovations does not affect customer satisfaction in Equity Bank Limited.

The study further sought to establish the respondents opinions on the extent to which various aspects of technological innovations adopted by the bank affect customer satisfaction.

**Table 4.18: Aspects of Technological Innovations that affect Customer Satisfaction**

Aspects of technological innovations that affect Customer Satisfaction	No extent	Little extent	Moderate extent	Large extent	Very large extent	Mean	Std dev
Convenience	11	0	19	20	50	3.97	1.31
Customer trust	6	13	19	31	31	3.69	1.25
Security of transactions	2	27	7	41	23	3.55	1.18
Ease of use	6	6	25	31	31	3.75	1.18
Awareness of Internet services and benefits	19	0	6	19	56	3.94	1.57
Cost of services	11	0	19	20	50	3.96	1.30
Accessibility	0	0	54	42	4.2	3.50	.59

**Source: Author, 2012**

From the study, majority of the respondents reiterated that convenience aspect of technological innovations affect customer satisfaction in the bank to a great extent as shown by a mean score of 3.97 as well as cost of services shown by a mean score of 3.96, awareness of internet services and benefits shown by a mean score of 3.94, ease of use shown by a mean score of 3.75, customer trust shown by a mean score of 3.69, security of transactions shown by a mean score of 3.55 and finally accessibility shown by a mean score of 3.50.

The study required the respondents to indicate their level of agreement with various statements of technological innovations and their effects on customer satisfaction in the Bank.

**Table 4.19: Technological Innovations and their effects on Customer Satisfaction**

<b>Technological innovations and their effects on customer satisfaction</b>	<b>No extent</b>	<b>Little extent</b>	<b>Moderate extent</b>	<b>Large extent</b>	<b>Very large extent</b>	<b>Mean</b>	<b>Std dev</b>
Technological innovations provide increased value for customers' banking transactions	27.1	37.5	6.3	14.6	14.6	3.52	1.414
The level of perceived customer loyalty affects business organizational success	18.8	12.5	14.6	25	29.2	3.33	1.492
Technological innovations leads to reduction in consumers' search costs	18.8	10.4	35.4	35.4	33.3	3.29	1.610
Technological innovations lowers the barrier to market entry	29.2	43.8	8.3	8.3	10.4	3.54	1.515
Technological innovations offers products and services adapted to the needs and wants of focus customers	18.8	18.8	18.8	18.8	25	3.68	1.352
Technological innovations ensure that products and services are offered efficiently	2.1	16.7	10.4	60.4	8.3	3.62	1.002

**Source: Author, 2012**

In this section, majority of the respondents recalled that technological innovations offers products and services adapted to the needs and wants of focus customers to a great extent as shown by a mean score of 3.68, technological innovations ensure that products and services are offered efficiently to a great extent as shown by a mean score of 3.62, technological innovations lowers the barrier to market entry to a great extent as shown by a mean score of 3.54 and technological innovations provide increased value for customers' banking transactions to a great extent as shown by a mean score of 3.52. They further reiterated that the level of perceived customer loyalty affects business organizational success to a moderate extent as shown by a mean score of 3.33 and technological innovations leads to reduction in consumers' search costs to a moderate extent as shown by a mean score of 3.29.

#### 4.8 Effects of Technology on Cost Efficiency

The study was also interested to investigate the role of technological innovations on cost efficiency in the Bank. As such the respondents were requested to rate the extents to which technological innovations affect the costs of operations in the Bank.

**Table 4.20: Extent to which Technological Innovations affect Costs of Operations**

Extent	Frequency	Percent
Very great extent	16	40
Great extent	11	28
Moderate extent	8	20
Little extent	4	10
Not at all	1	2
Total	40	100

**Source: Author, 2012**

From the study, 40% of the respondents indicated that technological innovations affect the costs of operations in the Bank to a very great extent, 28% of them indicated to a great extent, 20% of the respondents indicated to a moderate extent, 10% of the respondents indicated that business technological innovations affect the costs of operations in the Bank to a little extent, while 2% of them to no extent.

The respondents further were required to rate the extent to which the adoption of technological innovations in various aspects affects the operating costs of the Bank. A scale of 1 to 5 where 1= no extent, 2= little extent, 3= moderate extent, 4= great extent and 5 is to a very great extent was provided.

**Table 4.21: Aspects of Technological Innovations that affect Operating Costs of the Bank**

Aspects of technological innovations	No extent	Little extent	Moderate extent	Large extent	Very large extent	Mean	Std dev
Capital requirements	0	16.7	54.2	29.2	0	3.12	.68
Operational costs	4.2	16.7	37.5	37.5	4.2	3.21	.93
Competition	6.3	12.5	18.8	31.3	31.3	3.68	1.25
Profitability	2.3	27.1	6.8	41.4	22.6	3.55	1.18
Minimum bank reserves	0	8.3	62.5	25	4.2	3.25	.68
Customer base/reach	10.5	0	14.3	51.9	23.3	3.78	1.13
Customer relation	14.3	6.8	36.8	36.8	5.3	3.12	1.10

**Source: Author, 2012**

Majority of the respondents indicated that customer base/reach affects the operating costs of the Bank to a great extent as shown by a mean score of 3.78, followed by competition as shown by a mean score of 3.68, profitability also affects the operating costs of the Bank to a great extent as shown by a mean score of 3.55, while minimum bank reserves, operational costs, capital requirements and customer relation affects the operating costs of the Bank to moderate extents as shown by mean scores of 3.25, 3.21, 3.12 and 3.12 respectively.

The table below shows the results on the extent to which technological innovations influence the costs efficiency of the bank in various aspects where a scale of 1 to 5 where 1 is to a very great extent and 5 is to no extent was used.

**Table 4.22: Effects of Technological Innovations on Costs Efficiency in the Bank**

Effects of technological innovations on costs efficiency in the Bank	No extent	Little Extent	Moderate Extent	Great Extent	Very Great	Mean	Std. Dev.
Assures the survival of the bank	0	0	54	42	4	3.50	0.59
Enhances the achievement of sustainable financial performance	6	13	19	31	31	3.69	1.25
It increases service efficiency and customer base	2	27	7	41	27	3.55	1.18
Has a better service quality	4	8	29	54	4	3.46	0.88
Has a positive impact on transfers, payments, deposits and withdrawals in financial transactions of small businesses	0	8	63	25	4	3.25	0.68
It is a cost effective, reliable and simple way of conducting business and reduces the instances of human error	6	13	19	31	31	3.69	1.25
Lowers the costs of serving low-income customers	2	27	7	41	23	3.55	1.18
Increases the Bank's competitive positioning	6	6	25	31	31	3.75	1.18

**Source: Author, 2012**

From the results depicted above, majority of the respondents opined that technological innovations increase the bank's competitive positioning to a great extent as shown by a mean score of 3.75, enhances the achievement of sustainable financial performance to a great extent as shown by a mean score of 3.69, it is also a cost effective, reliable and simple way of conducting business and reduces the instances of human error to a great extent as shown by a mean score of 3.69 and it increases service efficiency and customer base to a great extent as shown by a mean score of 3.55 as well as lowering the costs of serving low-income customers to a great extent as shown by a mean score of 3.55 and assures the survival of the bank to a great extent as shown by a mean score of 3.50. The respondents further indicated that technological innovation has a better service quality to a moderate extent as shown by a mean score of 3.46 and has a positive impact on transfers, payments, deposits and withdrawals in financial transactions of small businesses to a moderate extent as shown by a mean score of 3.25.

The study sought to establish the extents to which technological innovations affect various aspects of performance in a bank.

**Table 4.23: Measures of Performance Resulting from Technological Innovations**

Measure of Performance	No extent	Little extent	Moderate Extent	Great extent	Very great extent	Mean	Std. Dev.
Customer numbers	11.3	0	18.8	20.3	49.6	3.96	1.30
Employees output	7.5	0	13.5	34.6	44.4	4.16	0.92
Business processes	0	0	12	26.3	61.7	4.50	0.70
Financial success	3.8	15.8	4.5	13.5	62.4	4.15	1.27
New products and services	18.8	18.8	18.8	18.8	25	3.69	1.35

Source: Author, 2012

Majority of the respondents indicated that technological innovations affect business processes to a great extent as shown by a mean score of 4.50, they also affect employees output to a great extent as shown by a mean score of 4.16 as well as financial success shown by a mean score of 4.15, then customer numbers shown by a mean score of 3.96 and finally new products and services shown by a mean score of 3.69.

The respondents were required to give any other information on the effects of technological innovation on performance of the bank. Majority of the respondents indicated that technological innovations in the Bank influences the profits, net income as well as return on assets and return on equity. Other respondents indicated that technological innovations contribute to economic growth of banks, competitive positioning and assured the survival of the bank. The respondents cited hindrances to technological innovations in the bank include inadequate finances, lack of specific technological innovations and a high generation of e products. The respondents also indicated that the possible solutions to the challenges hindering technological innovations in the bank include good management, allocation of funds to electronic technology and collaboration with technological organizations.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter provides the summary of the findings from chapter four, and it also gives the conclusions and recommendations of the study based on the objectives of the study. The objectives of this study were to establish the effect of technology on revenue of Equity Bank, to examine how technology has affected market share of Equity Bank, to find out the extent to which technology has affected customer satisfaction and retention at Equity Bank and to establish the effect of technology on the cost/efficiency of Equity Bank.

#### **5.2 Summary of the Findings**

The study aimed at investigating the effects of technology on performance of Equity Bank. The study found that various technological innovations adopted by the bank affected its performance to a moderate extent as indicated by 56.9% of the respondents. Majority of the respondents indicated that mobile banking technologies are used in the Bank's operations to a great extent as shown by a mean score of 3.95, online account opening is used to a great extent as shown by a mean score of 3.68, as well as internet banking transactions shown by a mean score of 3.62 and ATM deposits and withdrawals shown by a mean score of 3.50, while electronic money transfer is used in the Bank's operations to a moderate extent as shown by a mean score of 3.37. Further, technological innovation is considered as a process which is science, technology and system based. Majority of the respondents indicated that technological learning ability forms the bank's technological system to a great extent as shown by a mean score of 4.4962, as well as others like networking shown by a mean score of 4.1579, environmental factors shown by 62.4% and internal capabilities shown by a mean score of 3.9699.

### **5.2.1. Revenue**

On the effects of technological innovations on revenues, 36.1% of the respondents indicated that adoption of various technologies affects the revenues of the Bank to a very great extent. It was also found that Automated Teller Machines (ATMS) deposits and withdrawals affects the revenues of the Bank to a great extent as shown by a mean score of 4.21, electronic money transfer affects the revenues of the Bank to a great extent as shown by a mean score of 4.04, Internet banking transactions affects the revenues of the Bank to a great extent as shown by a mean score of 4.02, mobile banking technologies affects the revenues of the Bank to a great extent as shown by a mean score of 3.92, online account opening affects the revenues of the Bank to a great extent as shown by a mean score of 3.77, PC-banking affects the revenues of the Bank to a great extent as shown by a mean score of 3.68 as well as Electronic Funds Transfer at Point of Sale (EFTPOS) affects the revenues of the Bank to a great extent as shown by a mean score of 3.55. The respondents indicated agreement that technological banking solutions offer reduced customer support costs as well as revenue growth as shown by a mean score of 3.68, mobile banking offers the bank with opportunity to target and acquire new customer segments leading to increased customer growth and revenue as shown by a mean score of 3.58, innovative, personalized mobile services also assist banks to attract and retain customers as shown by a mean score of 3.54 and technological innovations lead to more satisfied customer base hence higher economic returns as shown by a mean score of 3.50, while they remained neutral that technological innovations attract interest from customers to generate revenue streams and the sale of related products and services as shown by a mean score of 3.46.

### **5.2.2. Market Share**

The study further found that various technologies affect the market shares of the Bank to a moderate extent as indicated by 57% of the respondents. As such, the various aspects of

technological innovations that affect the market share of the Bank include customer security to a great extent as shown by a mean score of 3.95, competitive strength to a great extent as shown by a mean score of 3.77, efficient service delivery to a great extent as shown by a mean score of 3.69, convenient locations to a great extent as shown by a mean score of 3.58, partnerships with several organizations to a great extent as shown by a mean score of 3.56 and product development to a great extent as shown by a mean score of 3.55. The respondents agreed that technological tools and techniques that support the sales process increases market reach, the need to expand and maintain banking market share has influenced the bank to invest more in making better use of technological innovations, product and service development is a speed-to-market a decisive competitive strength, technological innovations have a positive impact on business performance by leading to a market share increase and that through use of technology the bank is able to offer services professionally than its competitors in a better situation to create a sustainable competitive advantage. The respondents however remained neutral on that technological innovations ensure that the bank offer services and products that are adapted to the needs and wants of focus customers.

### **5.2.3. Customer Satisfaction**

The study found that use of technological innovations affect customer satisfaction in the Bank to a great extent as indicated by 36.1% respondents. Majority of the respondents reiterated that convenience aspect of technological innovations affect customer satisfaction in the bank to a great extent as shown by a mean score of 3.97 as well as cost of services shown by a mean score of 3.96, awareness of internet services and benefits shown by a mean score of 3.94, ease of use shown by a mean score of 3.75, customer trust shown by a mean score of 3.69, security of transactions shown by a mean score of 3.55 and finally accessibility shown by a mean score of 3.50. The respondents recalled that technological innovations offers products and services adapted to the needs and wants of focus customers to a great extent as shown by a mean score of

3.68, technological innovations ensure that products and services are offered efficiently to a great extent as shown by a mean score of 3.62, technological innovations lowers the barrier to market entry to a great extent as shown by a mean score of 3.54 and technological innovations provide increased value for customers' banking transactions to a great extent as shown by a mean score of 3.52. They further reiterated that the level of perceived customer loyalty affects business organizational success to a moderate extent as shown by a mean score of 3.33 and technological innovations leads to reduction in consumers' search costs to a moderate extent as shown by a mean score of 3.29.

#### **5.3.4. Cost Efficiency**

On the role of technological innovations on cost efficiency, the study found that 40% of the respondents felt that technological innovations affect the costs of operations in the Bank to a very great extent. The respondents indicated that customer base/reach affects the operating costs of the Bank to a great extent as shown by a mean score of 3.78, followed by competition as shown by a mean score of 3.68, profitability also affects the operating costs of the Bank to a great extent as shown by a mean score of 3.55, while minimum bank reserves, operational costs, capital requirements and customer relation affects the operating costs of the Bank to moderate extents as shown by mean scores of 3.25, 3.21, 3.12 and 3.12 respectively. Majority of the respondents opined that technological innovations increase the bank's competitive positioning to a great extent as shown by a mean score of 3.75, enhances the achievement of sustainable financial performance to a great extent as shown by a mean score of 3.69, it is also a cost effective, reliable and simple way of conducting business and reduces the instances of human error to a great extent as shown by a mean score of 3.69 and it increases service efficiency and customer base to a great extent as shown by a mean score of 3.55 as well as lowering the costs of serving low-income customers to a great extent as shown by a mean score of 3.55 and assures the

survival of the bank to a great extent as shown by a mean score of 3.50.

From the study, technological innovations affect business processes to a great extent as shown by a mean score of 4.50, they also affect employees output to a great extent as shown by a mean score of 4.16 as well as financial success shown by a mean score of 4.15, then customer numbers shown by a mean score of 3.96 and finally new products and services shown by a mean score of 3.69. Further, technological innovations in the Bank influence the profits, net income as well as return on assets and return on equity and technological innovations contribute to economic growth of banks, competitive positioning and assured the survival of the bank.

### **5.3 Conclusions**

The study concludes that the Bank has employed various technological innovations. These included mobile banking technologies (mobile phone transactions), online account opening, internet banking transactions, electronic money transfer and ATM deposits and withdrawals. These technological innovations adopted by the bank affected its performance. On that, technological learning ability forms the bank's technological system as well as networking, environmental factors and internal capabilities.

#### **5.3.1. Revenue**

The study also concludes that technological innovations affect revenues of the bank. Automated Teller Machines (ATMS) deposits and withdrawals, electronic money transfer, Internet banking transactions, mobile banking technologies, online account opening and PC-banking as well as Electronic Funds Transfer at Point of Sale (EFTPOS) affects the revenues of the Bank. technological banking solutions offer reduced customer support costs as well as revenue growth, mobile banking offers the bank with opportunity to target and acquire new customer segments leading to increased customer growth and revenue, innovative, personalized mobile services also

assist banks to attract and retain customers and technological innovations lead to more satisfied customer base hence higher economic returns.

### **5.3.2. Market Share**

The study deduces that various technologies affect the market shares of the Bank. The various aspects of technological innovations that affect the market share of the Bank include customer security, competitive strength, efficient service delivery, convenient locations, partnerships with several organizations and product development. Technological tools and techniques that support the sales process increases market reach, the need to expand and maintain banking market share has influenced the bank to invest more in making better use of technological innovations, product and service development is a speed-to-market a decisive competitive strength, technological innovations have a positive impact on business performance by leading to a market share increase and that through use of technology the bank is able to offer services professionally than its competitors in a better situation to create a sustainable competitive advantage.

### **5.3.3. Customer satisfaction**

The study further established that technological innovations affect customer satisfaction in the Bank. As such, convenience, cost of services, awareness of internet services and benefits, ease of use, customer trust, and security of transactions and accessibility aspects of technological innovations affect customer satisfaction in the bank. Technological innovations offers products and services adapted to the needs and wants of focus customers, technological innovations ensure that products and services are offered efficiently, technological innovations lowers the barrier to market entry, technological innovations provide increased value for customers' banking transactions, the level of perceived customer loyalty affects business organizational success and technological innovations leads to reduction in consumers' search costs.

#### **5.3.4. Cost Efficiency**

The study also concludes that technological innovations affect the costs of operations in the Bank. Customer base/reach, competition, profitability, minimum bank reserves, operational costs, capital requirements and customer relation affects the operating costs of the Bank. Technological innovations increase the bank's competitive positioning, enhances the achievement of sustainable financial performance, it is also a cost effective, reliable and simple way of conducting business and reduces the instances of human error and it increases service efficiency and customer base as well as lowering the costs of serving low-income customers and assures the survival of the bank.

#### **5.4 Recommendations**

From the study findings and conclusions, it is clear that technological innovations affect revenues of the bank.

##### **5.4.1. Revenue**

These are as a result of various technologies such as Automated Teller Machines (ATMS) deposits and withdrawals, electronic money transfer, Internet banking transactions, mobile banking technologies, online account opening and PC-banking as well as Electronic Funds Transfer at Point of Sale (EFTPOS). The study therefore recommends that the bank should determine the technical background of the majority of its customers before endeavoring into the use of advanced technologies. This entails assessing the literacy level of its major customers, the specific needs of its target customers and the potential benefits accruing to customers through the use of current technologies. This can be achieved through carrying a customer competence and satisfaction survey.

##### **5.4.2. Market Share**

The study findings and conclusions show that various technologies affect the market shares of the Bank. The study recommends that the bank should ensure that the various technological innovation approaches used are focused on gaining market shares. As such the technologies adopted should address various aspects like customer security, competitive strength, efficient service delivery, convenient locations, partnerships with several organizations and product development. They should adopt technological tools and techniques that support the sales process, that enhance expanding and maintaining banking market share, influence the bank to invest more in making better use of technological innovations, they should have a positive impact on business performance by leading to a market share increase.

#### **5.4.3. Customer Satisfaction**

The study further recommends that for the bank to enhance customer satisfaction through technological innovations there is need to address convenience, cost of services, awareness of internet services and benefits, ease of use, customer trust, security of transactions and accessibility aspects of technological innovations. This will ensure that the bank offers products and services adapted to the needs and wants of focus customers efficiently, lower the barrier to market entry, provide increased value for customers' banking transactions, increase the level of perceived customer loyalty and lead to reduction in consumers' search costs.

#### **5.4.4. Cost Efficiency**

The study finally recommends that since technological innovations affect the costs of operations in the Bank, they need to employ modern technological innovations such as internet based banking services. The critical role of technological innovation in the development of a company and its contribution on the economic growth of firms would consider customer base/reach, competition, profitability, minimum bank reserves, operational costs, capital requirements and customer relation which affect the operating costs of the Bank. These will enhance achievement

of sustainable financial performance, through cost effective, reliable and simple way of conducting business as well as reduce the instances of human error, increase service efficiency and customer base as well as lowering the costs of serving low-income customers and assuring the survival of the bank.

### **5.5 Recommendations for Further Studies**

The study has assessed the role of technological innovations on performance of organizations within the banking industry in Kenya where the focus was on Equity Bank Limited and established that revenue, market share, customer satisfaction and cost efficiency are the main effects of technological innovations on the performance of Equity bank Limited in Kenya. The commercial banking sector in Kenya however consists of various other commercial banks which differ in their way of management and have different settings all together. This warrants the need for another study which would ensure generalization of the study findings for all the commercial banks in Kenya and hence pave way for new policies. The study therefore recommends another study be done with an aim to investigate the role of technological innovations on the performance of the commercial banks in Kenya.

## REFERENCES

- Abernathy, W.J., Utterback, J.M. (2005), *Innovation and the Evolution of Technology in the Firm*, Harvard University Press, Cambridge, MA, .
- Austin T (2007). **Getting down to business: Information and Communication Technology** Handbook in FINWEEK, November 29, p. 2.
- Ayres, R.U. (2008), "Technology: the Wealth of Nations", **Technological Forecasting and Social Change**, Vol. 33 No.2, pp.189-201.
- Bankley W, Scerri M, Saloojee I (2006). **Measuring Innovation in OECD and non-OECD countries: Selected Seminar papers**, Cape Town: Human Sciences Research Council.
- Berger AN (2003). **The economic effects of technological progress: Evidence from the banking industry**. *Journal of Money Credit Bank*, 35(2): 141-176
- Bijker, W.E, Hughes, T.P, Pinch, T.J (2007), **The Social Construction of Technological Systems**, MIT Press, Cambridge, MA, .
- Black J (2002). **A Dictionary of Economics** 2nd Edition, New York: Oxford University Press.
- Central Bank of Kenya, (2010). **Annual Bank Report**. Nairobi: Government Printers.
- Chien T., Danw S.Z.,(2004), **Performance measurement of Taiwan commercial banks”, International Journal of Productivity and Performance management**, Vol. 53, NO. 5, pp.425-
- Cooper DR, Schindler PS (2006). **Business Research Methods**. 9<sup>th</sup> edition. New York: McGraw-Hill/Irwin.
- Gitonga Timothy (2003) **Innovation Processes and the Perceived Role of the CEO in the Banking Industry**. Unpublished MBA project. University of Nairobi.
- Goh, A. (2002), **Industrial Policy Focus of South East Asian Nations: Technology Development or Innovation?**, *Journal for Institutional Innovation, Development and Transition*, Vol. 6 No.1, pp.89-91.
- Hamel, G. (2002). **Leading the Revolution**. New York: Plume (Penguin Books).

- Jürgen S (2002). **IT innovations and financing patterns: implications for the financial system** [On-line]. Available: [www.bis.org](http://www.bis.org)
- Kaplan, R. S., Norton, D. P. (1996) **The Balanced Scorecard. Translating Strategy into Action.** Harvard Business School Press, Boston, Massachusetts.
- Kihumba C. W. (2008), **Determinants of Financial Innovation and its Effects on Banks Performance in Kenya.** Unpublished MBA project. University of Nairobi.
- Lönnqvist, A. (2001) **Suorituskyvyn mittauksen käyttö suomalaisissa yrityksissä.** Tampere University of Technology.
- McAdam, R., and McClelland, J. (2002), **Sources of new product ideas and creativity practices in the UK textile industry,** *Journal of Technovation*, Vol. 22 pp.113-21.
- Moore, G.C, Benbasat, I (1999), **Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation,** *Information Systems Research*, Vol. 2 pp.192-222.
- Neely, A., Adams, C. (2000) **Perspectives on Performance: The Performance Prism.** Centre for Business Performance, Cranfield Business School, UK.
- Nonaka, I., Takeuchi, H. (1995), **The Knowledge-creating Company,** Oxford University Press, New York, NY, .
- Pack, H., Westphal, L.E. (2006), **Industrial Strategy and Technological Change: Theory Versus Reality,** *Journal of Development Economics*, Vol. 22 pp.87-128.
- PMA (2001) (Perspectives on Performance) Newsletter, Vol. 1, Iss.
- Pont, M., Shaw, R. (2003), **Measuring Marketing Performance: A Critique of Empirical Literature,** paper presented at the ANZMAC.
- Porteous D, Hazelhurst E (2004). **Banking on Change: Democratizing Finance in South Africa, 1994-2004 and beyond,** Cape Town: Double Story Books
- Qayyum A, Khan S (2007). **X-efficiency, Scale Economies, Technological Progress and Competition: A Case of Banking Sector in Pakistan.** Islamabad Pakistan Institute of Development.

- Roehm, M.L., Sternthal, B. (2001), **The Moderating Effect of Knowledge and Resources on the Persuasive Impact of Analogies**, *Journal of Consumer Research*, Vol. 28 No.2, pp.257-72.
- Rogers, E.M. (1995), **Diffusion of Innovations**, 4th ed., The Free Press, New York, NY, .
- Rothwell, R. (1992), **Successful Industrial Innovation Critical Success Factors for the 1990s"**, *Research and Development Management*, Vol. 22 No.3, pp.221-39.
- Schon N M (1998) **The innovative attitude of small and medium-sized enterprises**, *Journal of Small Business Management*, Vol. 28 No.1, pp.68-80.
- Teece, D.J., Pisano, G., and Shuen, A. (1997), **Dynamic Capabilities and Strategic Management**, *Strategic Management Journal*, Vol. 18 No.7, pp.509-33.
- Tefler, J.A. (2002), **Innovation**, in Biemans, W.G. (Eds), *Managing Innovation Within Networks*, Routledge, .
- Tidd, J., Bessant, J., and Pavitt, K. (2001), **Managing Innovation: Integrating Technological, Market and Organisational Change**, Wiley, Bognor Regis.
- Toivanen, J. (2001) **Balanced Scorecardin implementointi ja käytön nykytila Suomessa**. Acta Universitatis Lappeenrantaensis 108, Dissertation, Lappeenranta University of Technology.
- Tushman, M.L., Rosenkopf, L (2002), **Organizational Determinants of Technological Change: Towards a Sociology of Technological Evolution**, *Research in Organizational Behavior*, Vol. 14 pp.311-47.
- Von Stamm, B. (2003), **Managing Innovation, Design and Creativity**, Chichester: John Wiley & Sons.
- Wang, Y., Wang, Y., Lin, H., & Tang, T. (2003). **Determinants of User Acceptance of Internet Banking: An Empirical Study**. *International Journal of Service Industry Management*, 14(5), 501-519.
- Wheelen, T., Hunger, D. (2002), **Strategic Management and Business Policy**, 8th ed., Prentice-Hall, Englewood Cliffs, NJ, .

Wilkinson, A. (2003), **Technology – An Increasingly Dominant Factor in Corporate Strategy**, *R&D Management*, Vol. 24 No.2-3, pp.145-71.

Yasuharu UKAI (2003), **The Effects of Information System Investment in Banking Industry**.

Zerbe RO Jr. (2001). **Economic Efficiency in Law and Economics**. Cheltenham, UK: Edward Elgar Publishing.

KENYATTA UNIVERSITY LIBRARY  
MAIN CAMPUS

## APPENDICES

### Appendix I: Letter of Introduction

Irene Yego  
Kenyatta University  
School of Business  
Masters of Business Administration

**REF: THE RELATIONSHIP OF TECHNOLOGICAL INNOVATION ON PERFORMANCE OF ORGANIZATION WITHIN THE BANKING INDUSTRY IN KENYA (A CASE OF EQUITY BANK)**

I am a student at Kenyatta University pursuing Masters of Business Administration (MBA) Degree. I am conducting a research project on The Role Of Technological Innovation On Performance Of Organization Within The Banking Industry In Kenya: A Case Of Equity Bank. The focus of my research will be on Equity Bank and this will involve use of questionnaires administered to management staff in the Bank.

You have been chosen to participate in this study. I kindly request you to take a few minutes to fill in this questionnaire. The information collected will be treated with utmost confidentiality and is for academic purpose only. The finding and recommendations of the research will be availed to you upon completion of the research

Thanks you in advance

Irene Yego  
Kenyatta University

## Appendix II: Questionnaire

### INSTRUCTIONS

Kindly answer all the questions to the best of your ability. Indicate with a tick or filling in the space(s) provided.

### PART A: GENERAL INFORMATION

1. What is your gender?

Male  Female

2. Your age bracket (Tick whichever appropriate)

18 – 24 Years  25 - 30 Years

31 - 34 years  35 – 40 years

41 – 44 years  45 – 50 years

Over 51 years

3. How long have you been working in this Bank?

0-5 yrs  5-10 yrs

10-15  Over 15 yrs

4. What is your highest academic qualification?

Certificate  Diploma

Bachelor's degree  Masters Degree

Others (Specify.....)

### PART B: TECHNOLOGICAL INNOVATIONS AND FIRM PERFORMANCE

5. To what extent do the various technological innovations adopted by the bank affect its performance?

To a very great extent  To a great extent

To a moderate extent  To a little extent

To no extent

6. To what extent does this bank make use of the following technological innovations in it's

operations? Use a scale of 1 to 5 where 1 is to no extent and 5 is to a very great extent

<b>Technological innovation</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Mobile banking technologies					
Electronic money transfer					
Internet banking transactions					
ATM deposits and withdrawals					
Online account opening					
Others (Others.....)					

7. Technological innovation is considered as a process which is science, technology and system based. In the light of this statement, rate the extent to which the following factors of technological innovations form the bank's technological system. Use a scale of 1 to 5 where 1= no extent, 2= little extent, 3= moderate extent, 4= great extent and 5 is to a very great extent.

<b>Extent</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Internal capabilities					
Networking					
Technological learning ability					
Environmental factors					
Others (Others.....)					

**EFFECT OF TECHNOLOGY ON REVENUES**

8. To what extent does the adoption of various technologies affect the revenues of this bank?

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

9. To what extent do the following types of technological innovations affect the revenues of this bank? Use a scale of 1 to 5 where 1 is to no extent and 5 is to a very great extent

<b>Types of technological innovations that affect the revenues of this bank</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Mobile banking technologies					
Electronic money transfer					
Internet banking transactions					
Automated Teller Machines (ATMS) deposits and withdrawals					
Online account opening					
Pc-banking					
Electronic Funds Transfer at Point of Sale (EFTPOS)					
Others (Others.....)					

10. What is your level of agreement with the following statements about the effects of technological innovations on the revenues of the bank? Use a scale of 1 to 5 where 1 is strongly disagree and 5 is strongly agree.

<b>Statements about the effects of technological innovations on the performance</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Technological innovations attract interest from customers to generate revenue streams and the sale of related products and services					
Technological innovations lead to more satisfied customer base hence higher economic returns					
Technological banking solutions offer reduced customer support costs as well as revenue growth					
Innovative, personalized mobile services also assist banks to attract and retain customers					
Mobile banking offers the Bank with opportunity to target and acquire new customer segments leading to increased customer growth and revenue					
Others (Others.....)					

**EFFECTS OF TECHNOLOGY ON MARKET SHARE**

11. Rate the extent to which various technologies affect the market shares of the Bank?

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

12. To what extent do the following aspects of technology affect the market share of the Bank?

Use a scale of 1 to 5 where 1 is to no extent and 5 is to a very great extent

<b>Aspects of technological innovations that affect the market share</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Efficient service delivery					
Product development					
Competitive strength					
Partnerships with several organizations					
Customer security					
Convenient locations					
Others (Others.....)					

13. Kindly indicate your level of agreement with the following statements about influence of technology on market share of this bank. Use a scale of 1 to 5 where 1 is strongly disagree and 5 is strongly agree.

<b>Influence of technological innovations on market share</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Technological innovations have a positive impact on business performance by leading to a market share increase					
The need to expand and maintain banking market share has influenced the bank to invest more in making better use of technological innovations					
Technological tools and techniques that support the sales process increases market reach					
Product and service development is a speed-to-market a decisive competitive strength					
Technological innovations ensure that the bank offer services and products that are adapted to the needs and wants of focus customers					
Through use of technology the bank is able to offer services professionally than its competitors in a better situation to create a sustainable competitive advantage					
Others (Specify.....)					

#### **EFFECTS OF TECHNOLOGY ON CUSTOMER SATISFACTION AND RETENTION**

14. Rate the extent to which use of technological innovations affect customer satisfaction in the bank.

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

15. To what extent do the following aspects of technological innovations adopted by the bank affect customer satisfaction?

<b>Aspects of technological innovations that affect Customer Satisfaction</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Convenience					
Customer trust					
Security of transactions					
Ease of use					
Awareness of Internet services and benefits					
Cost of services					
Accessibility					
Others (Specify.....)					

16. What is your level of agreement with the following statements of technological innovations and their effects on customer satisfaction in the bank? Kindly rate on a scale of 1 to 5 where 1 is to no extent and 5 is to a very great extent

<b>Technological innovations and their effects on customer satisfaction</b>					
Technological innovations provide increased value for customers' banking transactions					
The level of perceived customer loyalty affects business organisational success					
Technological innovations leads to reduction in consumers' search costs					
Technological innovations lowers the barrier to market entry					
Technological innovations offers products and services adapted to the needs and wants of focus customers					
Technological innovations ensure that products and services are offered efficiently					
Others (Specify.....)					

### **EFFECTS OF TECHNOLOGY ON COST EFFICIENCY**

17. To what extent does technological innovation affect the costs of operations in this Company?

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

18. Rate the extent to which the adoption of technological innovations in the following aspects affects the operating costs of the Bank. Please rate on a scale of 1 to 5 where 1= no extent, 2= little extent, 3= moderate extent, 4= great extent and 5 is to a very great extent.

<b>Aspects of technological innovations</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Capital requirements					
Operational costs					
Competition					
Profitability					
Minimum bank reserves					
Customer base/reach					
Customer relation					
Others (Specify.....)					

19. To what extent do technological innovations influence the costs efficiency of the bank in the following aspects? Use a scale of 1 to 5 where 1 is to a very great extent and 5 is to no extent

<b>Effects of technological innovations on costs efficiency in the Bank</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Assures the survival of the bank					
Enhances the achievement of sustainable financial performance					
It increases service efficiency and customer base					
Has a better service quality					
Has a positive impact on transfers, payments, deposits and withdrawals in financial transactions of small businesses					
It is a cost effective, reliable and simple way of conducting business and reduces the instances of human error					

Lowers the costs of serving low-income customers					
Increases the Bank's competitive positioning					
Others (Specify.....)					

20. Give any other information on the effects of technological innovation on performance of the bank.

.....

.....

.....

21. To what extent do technological innovations affect the following aspects of performance in the bank? Use a scale of 1 to 5 where 1 is to a very great extent and 5 is to no extent

Measure of Performance	1	2	3	4	5
Customer numbers					
Employees output					
Business processes					
Financial success					
New products and services					

**THANK YOU!!**

### Appendix III: The Budget Schedule

<b>BUDGET</b>	<b>TOTAL COST (Kshs)</b>
<b>MATERIALS</b>	
Literature Survey/ Photocopying	3,000
Internal Services	5,500
Research Assistant	8,500
<b>SUB TOTAL</b>	<b>17,000</b>
<b>OTHER COSTS</b>	
Draft Proposal Printing	500
Binding	400
Travel	2,000
Office Supplies	300
Telephone/ Internet	2000
Report Publication & Photocopying	500
Binding	400
<b>SUB TOTAL</b>	<b>6,100</b>
Contingency	2,000
<b>TOTAL COST</b>	<b>25,100</b>

**Appendix IV: Time Plan**

Time Frame;

Start – Finish Duration

Phase	Description	Number of weeks										
		1	2	3	4	5	6	7	8	9	10	11
1	Proposal development	█	█	█	█							
2	Data collection				█	█						
3	Data analysis						█	█				
4	Data interpretation							█	█			
5	Report writing								█	█		
6	Compilation and presentation										█	█

KENYATTA UNIVERSITY LIBRARY  
MAIN CAMPUS