THE EFFECT OF FINANCIAL INNOVATIONS ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE IN THE SCHOOL OF BUSINESS AND PUBLIC MANAGEMENT AT KCA UNIVERSITY

NOVEMBER 2017

DECLARATION

I declare that this research is my original work and has not been previously presented for the award of any degree in any other university.

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APPROVAL

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

Signature……………………………. Date ………………………………………..

Dr. Peter Njuguna

DEDICATION

This dissertation report is cordially dedicated to my parents and my husband. Thank you for your ceaseless, selfless and limitless encouragement, motivation and support that you have constantly and relentlessly given me. Without you, I would not have reached this level in my academic life. Truly, you have enabled me achieve and live to so much in this life and for this, I will be forever be indebted to all of you.

ACKNOWLEDGEMENT

I highly and sincerely express my appreciation to my Supervisor, Dr Peter Njuguna for his selfless professional guidance, wise counsel and helpful suggestions and corrections without which this dissertation would not have been completed. Equally I also appreciate the lecturers for their support while undertaking this course.Also, I wish to thank and appreciate KCA University for allowing me to take this course. Further I thank all my colleagues who tirelessly encouraged me to keep believing and, particularly, when the future looked pale. I am deeply humbled by your fruitful assistance. To my closest friends and relatives, I have one word for you: I will forever remain indebted for your genuine encouragements. Much thanks to all of you. God bless you all.

LIST OF ABBREVIATIONS AND ACRONYMS

ATMS-	Automated Teller Machines
CBK -	Central Bank of Kenya
DW-	Durbin Watson
ECB-	European Commercial Bank
EFTs-	Electronic Fund Transfers
IDT-	Innovation Diffusion Theory
KCB-	Kenya Commercial Bank
RTGS-	Real Time Gross Settlement
ROE-	Return on Equity
ROA-	Return on Assets
SPSS-	Statistical Package for Social Science
VIF-	Variance Inflation Factor

LIST OF TABLES

Table 2. 1 Operationalization of the Variables 31
Table 4: 1 Descriptive Statistics of Return on Assets 38
Table 4: 2 Descriptive statistics of Independent Variables 40
Table 4: 3 A Correlation Matrix Analysis Among the Variable 43
Table 4: 4 Measures of Normal Distribution 43
Table 4: 5 Hausman Test for Model for Model Selection 45
Table 4: 6 Heteroscedasticity Test 45
Table 4: 7 Durbin-Watson Test of Autocorrelation 46
Table 4: 8 Tests for Multicollinearity 47
Table 4: 9 Model Summary 48
Table 4: 10 Regression Coefficients 49
Table 4: 11 Test of Hypothesis 50

LIST OF FIGURES

Figure 2. 1 Conceptual Framework 29
Figure 4: 1 Histogram for Return on Assets 39
Figure 4: 2 Growth Plots for ROA of Each Bank 41
Figure 4: 3 Overlay Plot for Return on Assets 42

DEFINITIONS OF TERMS

Financial innovations- this is the development of new products r new delivery of financial products and services. These types of innovations are fostered by advancement of Information and Communication technology. Innovations are motivated by the need to meet new financial requirements in the markets. (Batiz-Lazo and Woldesenbet, 2006).

Commercial banks- these are financial institutions that are involved in the business of accepting deposits, giving out loans to borrowers, funds transfers among other services. For the purpose of this study, commercial banks will be banks that are regulated by the Central Bank of Kenya (CBK, 2016)

Electronic funds transfer- is transferring money without have the parties to be physically present at a single location(Saleem, Z., & Rashid, K. (2011).

Mobile banking- this is the carrying out of banking activities by the use of mobile phones. (Lee & Benbasat, 2013).

Internet banking- this is banking through the use of internet by help of computer and computer technology(Malhotra and Singh, 2010)

ROA- this is the ratio of total assets to income before taxation (Alexandru, 2008).

TABLE OF CONTENTS

DECLARATION .... **ii**
DEDICATION .... **iii**
ACKNOWLEDGEMENT .... **iv**
LIST OF ABBREVIATIONS AND ACRONYMS .... **v**
LIST OF TABLES .... **vi**
LIST OF FIGURES .... **vii**
DEFINITIONS OF TERMS .... **viii**
TABLE OF CONTENTS .... **ix**
ABSTRACT .... **xiii**
CHAPTER ONE **1**
INTRODUCTION **1**
1.1 Background of the Study 1
1.1.1 Financial Innovations 3
1.1.2 Financial Performance of Commercial Banks 5
1.2 Statement of the Problem 7
1.3 Objectives of the study 9
1.4.1 General Objective 9
1.4.2 Specific Objectives 9
1.4 Hypotheses of the Study 9
1.5 Justification of the Study 10
1.6 Significance of the Study 10
1.7 Scope of the Study 11
1.8 Basic Assumptions of the Study 12
1.9 De-limitations of the Study 12
1.10 Organization of the Study 12
1.11 Summary of the Chapter 13
CHAPTER TWO **14**
LITERATURE REVIEW **14**
2.1 Introduction 14
2.2 Theoretical Review 14
2.2.1 Schumpeter Theory of Innovations 14

2.2.2 Constraint-induced Financial Innovation Theory 16
2.2.3 Innovation Diffusion Theory 17
2.3 Financial Innovations and Financial Performance of Commercial Banks 18
2.4 Empirical Review 22
2.4.1 Electronic Fund Transfers and Financial Performance of Commercial Banks 22
2.4.2 Mobile Banking and Financial Performance of Commercial Banks 24
2.4.3 Internet Banking and Financial Performance of Commercial Banks 25
2.5 Gaps in Literature Review 28
2.6 Conceptual Framework 29
2.7 Operationalization of the Variables 31
2.8 Summary of the Chapter 31
CHAPTER THREE 32
RESEARCH METHODOLOGY 32
3.1 Introduction 32
3.2 Research Design 32
3.3 Target Population 32
3.4 Sample Size 33
3.5 Data Collection Methods 33
3.6 Data Analysis and Presentation 34
3.7 Validity of Research Instruments 35
3.6.1 Validity Test 35
3.8 Diagnostic Tests 35
3.7.1 Measures of Normality 35
3.7.2 Multi Collinearity 36
3.7.3 Auto Correlation 36
3.9 Ethical consideration 36
CHAPTER FOUR 38
DATA ANALYSIS, FINDINGS AND DISCUSSION 38
4.1. Introduction 38
4.2. Descriptive Statistics 38
4.2.1. Return on Assets 38
4.2.2. Descriptive statistics of Independent Variables 40

4.3 Exploratory Data Analysis 41
4.3.1 Pearson Correlation Matrices among Variables 42
4.4 Measures of Normal Distribution 43
4.5 Regression model analysis 44
4.6 Regression Model Selection 44
4.6.1 Hausman Test for Model for Model Selection 44
4.6.2 Heteroscedasticity Test 45
4.6.3 Durbin-Watson Test of Autocorrelation 46
4.6.4 Test for Multicollinearity 47
4.7 Panel Data Analysis 47
4.7.1 Model summary 47
4.7.2 Regression Coefficients 49
4.8 Test of Hypothesis 50
4.8.1 Electronic funds transfers and performance of commercial banks in Kenya 51
4.8.2 Mobile banking and performance of commercial banks in Kenya 51
4.8.3 Internet banking and performance of commercial banks in Kenya 51
4.9 Discussion of Findings 51
CHAPTER FIVE 54
CONCLUSION AND RECOMMENDATIONS 54
5.1 Introduction 54
5.2 Summary of Major Findings 54
5.2.1 Electronic Funds Transfer and performance of Commercial Banks 55
5.2.2 Mobile banking and performance of Commercial Banks 55
5.2.3 Internet banking and performance of Commercial Banks 56
5.3 Conclusions 56
5.3.1 Electronic Funds Transfer and performance of Commercial Banks 56
5.3.2 Mobile banking and performance of Commercial Banks 56
5.3.3 Internet Banking and Performance of Commercial Banks 57
5.4 Limitations of the Study 57
5.5 Recommendations 57
5.6 Suggestions for Further Research 58
REFERENCES 59

APPENDIX .A: Letter of Introduction 62
APPENDIX .B: Secondary Data Collection Sheet 63
APPENDIX .C: Ghant Chart 67
APPENDIX .D: Research Budget 68
APPENDIX .E: List of Commercial Banks In Kenya 69

ABSTRACT

The financial institutions have embraced changes by exploiting the capabilities presented by the Information and Technology. Financial innovations adopted by commercial banks refer to the development of new products and new ways of delivering products to customers. The specific objectives of the study were; to determine the effect of electronic fund transfers, mobile banking and internet banking on financial performance of commercial banks in Kenya. This study had a target population of an aggregate of all the commercial banks that are licensed and regulated by the Central Bank of Kenya with a sample of twelve commercial banks. This study used secondary data from Central Bank of KenyaNational payments Statistics supervisory reports and bank annual reports. This study collected data for a period of seven years.Data was analysed using STATA. A multiple regression model was used to establish the relationship between the electronic banking, mobile banking and internet banking on the Return on Assets of the commercial banks. The study has found that financial innovations have an influence on the performance of commercial banks in Kenya. The study found out that variations in Return on Assets could be explained by electronic funds transfers, mobile banking and internet banking. The study further established that all variables, that is, electronic funds transfers, mobile banking and internet banking affect Return on Assets positively. The study thus recommends that it is important for commercial banks to prudently adopt financial innovations as it has both positive effects on performance of commercial banks in Kenya.

Keywords: Commercial Banks**,** Financial Innovation, Financial Performance.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Innovations are crucial to organisations because they enable organisations to coup with changes that are presented by the environment (Kumar, 2011). Innovations take different forms in terms of products and processes of service delivery. Innovations are driven by forces within both internal and external environments. Gorton and Metrick (2010) notes that the major causes that lead to innovations is due to the need to reduce costs, enhance compliance to legal requirements and foster efficiency. It is true to suffice that the environment is usually characterised by turbulence and thus, there is a need to seek innovative processes. Innovations foster competitiveness of organisations by ensuring that they have a competitive edge in the market.

Gorton and Metrick (2010), categorises innovations into different categories depending on whether they effect changes on products or services or processes. In this respect, there are product innovations, market innovations, financial innovations and process innovations. Product innovations aims are bringing for the newer versions of products in the market for the same market while market innovations aim at enlarging the markets of an organisation. Process innovations seek to better the efficiency of processes and financial innovations are specifically for those institutions that offer financial services. They also argue that innovations are developed depending on the management analysis of the environment and responses to such challenges that may be identified.

According to Lawrence (2010), innovations are a conscious developments by firms in coming up with new products or the application of new processes in production. Thus, innovation is an organisational change that results in creation of new goods and services or improvement in production mechanisms. For a firm to maintain a competitive advantage in the industry, it is necessary for it to improve its products' quality and enhance the efficiency of the production process (Porter 2004). In the light of this observation, it is true to suffice that innovation takes two folds: new products are developed and or the process efficiency is enhanced.

Innovations are driven by the needs to combat the challenges being presented by the environment. It is important to note that innovations ensure that firms have competitive advantages in the market. Robert and Amit (2003), notes that since the business environment is highly mutating there is a dire need of seeking to create new products. Consequently, it follows that innovation is a generic objective among firms that want to be or remain competitive in the market.

Due to needs for efficiency and sustained performance, innovations are an inherent objective that is being sought by many modern organisations irrespective of whether they are involved in production of goods or provision of services. Beaver (2002), notes that companies and countries seeking to be competitive must be innovative. Evidently, therefore, innovation is a tool for enhancing the position of firms and countries in the markets. It is also important to note that innovations are not only in the financial sector but also in other sectors of the economy. In this respect there are a variety of aspects for innovations and this study considered financial innovations.

This study considers financial innovations that are to a large extent enabled by developments in technology. According to Tufano (2002), financial innovations are the creation of new financial tools that aims at eliminating or reducing the challenges facing the finance sectors. Thus, financial innovations may be seen as developments that enhance the financial institutions and markets. This can be achieved through utilisation of modern telecommunications technologies. (Batiz-Lazo and Woldesenbet, 2006), notes that financial innovations are a mean to enhancing the performance of a bank and ensuring that the bank maintains a competitive edge in the market. There is strict competition in the banking industry. Commercial banks faced rivalry from already existing banks and from microfinance and other finance companies. For this reason, it is inevitable for them to remain innovative in order to secure a favourable niche in the banking industry.

Financial innovations lead to new financial products. Frame& White (2004) argues that financial innovations includes the creation of a new product or a mean in the financial market. For instance, financial innovation may involve the curtailing of processes with an aim of cost reduction while satisfying the customer expectations. Where there are new processes and products it follows that new technologies have been used and thus innovation is a tool of adopting new ways by a bank.

1.1.1Financial Innovations

Ignazio (2007) defines financial innovations as the developments of new financial products, new ways of delivering already financial services or new financial services with new processes. Thus, financial innovations can take different ways. Noyer (2007) notes that financial innovation is the processes that bring about new products in the market. In all these definitions it can be concluded that for financial innovation to come to light, a new product of processes must be borne. Thus, financial innovations may be as a result of adopting on new technology in the banking industry or the generation of entirely new financial products. Globally, financial innovation may take different approaches ranging from new products such as floating rate housing mortgage and new delivery processes such as online banking (Noyer, 2007).

The creation of new financial products must be followed by massive consumer awareness (Tufano, 2002). For this reason new products must be made available to the target market through campaigns and other awareness programmes. These innovations must in a way solve a certain set of challenges that are evident in the finance markets and institutions. Banks operate in highly volatile environments and need to take strategies that will steer them forward, toward their generic goals of survival growth and increase in profitability. Sandvik (2003) argues that innovations are one of the best tools for ensuring competitiveness of firms.

Financial innovations help in reducing the cost of providing the existing products and services (Nofie, 2011). Therefore financial innovation is a tool of ensuring that the bank works effectively and efficiently in customer satisfaction. It is true to suffice that services firms are highly regarded if they meet customer expectation as and when they are called to. Banks accepts deposits from individuals and institutions for safe custody or interest earning. The bank should facilitate the access of such funds to the owners as and when they are needed. Accordingly therefore, financial innovations have resulted to cost efficiency in many banks. Siam (2006) notes that e-banking as a financial innovation lead to more customer satisfaction in Jordan.

Batiz-Lazo and Woldesenbet (2006) argues that the development of financial innovations is a result of several factors; reduction in bankruptcy costs, tax advantages, reduction in moral hazard, reduced regulatory costs, transparency and customization. In this regard, these developments in the industry once adopted ensure a bank is well cushioned against the shocks in the industry. According to Anbalagan (2011) most financial innovations are brought into existence due to the emergence of computers and technological improvements. The automated teller machine, for instance is an innovation that is fostered by advancements in Information and Communication Technology (ICT).

Online banking and electronic banking are examples of financial innovations that have been adopted by many commercial banks. ATMs use is on the rise since inception in the 1990s. It is important to note that commercial banks in Kenya are regulated by the Central Bank of Kenya. The use of Real Time Gross settlement (RTGS), Electronic Funds Transfer (EFT), mobile phone banking, bancassurance, payments of utility bills, and online customer self-customers are other financial innovations in Kenya. This has in turn increased the number of players in the banking industry and has ensured efficiency in service delivery (Ignazio, 2007). In addition the adoption and success of Mpesa has revolutionized the banking sector in Kenya.

1.1.2Financial Performance of Commercial Banks

Financial performance is the measure of how well the company uses its scarce resources in generating revenue (Richard *et al*, 2009). In this capacity financial performance may be seen as the end to a certain process. According to Pandey (2010) financial performance is the measure of how a firm uses its resources in its common line of operations in the generation of income. Thus, financial performance is the evaluation of the chance that a company will make profits with the existing assets.

According to European Central Bank (2004), a bank's performance is the capacity to generate sustainable profitability which is essential for banks to maintain on going activity and for its investors to obtain fair returns, as it guarantees more resilient solvency ratios, even in the context of riskier business environment. In this sense, thus financial performance of commercial bank must be a continuous parameter over time. (Alam*et al.*, 2011) cites that the financial performance of banks should be considered as a return no risk ratio. In this perspective, financial performance should consider the risks and returns of investments. CBK (2011), financial performance of commercial banks stood at asset worth of Ksh 1.7 trillion in 2010. Performance measurement is not only crucial in providing the information on how the business is doing but also on how to better it. It is of paramount importance to be to generate information on the efficiency and effectives of the business in it processes. A good performance measurement should improve the performance of the organization such that it serves its customers, employees, owners and stakeholders. A performance measurement system enables an enterprise to plan, measure and control its performance according to a pre-defined strategy (Kajola, 2008).

Financial performance refers to the degree to which financial objectives of an entity have been achieved, a process of measuring the results of a firm in monetary terms. This mean that the overall financial health of a firm is measured over a given period of time and can likewise be used to compare similar firms across the same industry. Commercial banks will be measured in terms of how well they trade with the deposits they receive from the public and the loans they borrow to advance their objectives, which include profit maximization. This includes playing with the interest rates in a way that makes them borrow at low interest rates and lend at higher interest rates however, within the acceptable rates. Combs *et al* (2005) identifies different measures of performance with respect to banks. There are profitability measures, such as operating income to sales ration, solvency ratios such as current ratio and valuation ratios.

1.2 Statement of the Problem

The Central Bank of Kenya (2013), notes that there are a variety of banking and financial innovations that include emergence of EFT, RTGS, mobile banking, internet banking, telephone banking and servicing of utility bills among others. However, according to Mansury and Love (2008) innovations leads to positive effect on growth of organisations and not necessarily on performance and productivity. Further, Danneels (2000), notes that innovations mostly benefits large organisations and not the small institutions. According to Frame and White (2008) few empirical are available with respect to the effect of financial innovations on performance due to challenges presented in data availability particularly in developing countries. Learner and Tufano (2011), notes that the findings on effect of financial innovations on financial performance of commercial banks cannot be generalized. They argue that most researches have been done on case studies and hence the findings may be specific and applicable to those banks under consideration. On the other hand Hendrickson and Nichols (2011) notes that financial innovations by small banks in the United States of America (USA) led to improved performance. This is because the small banks gains an edge in the market and are able to attract more customers. (Mwania and Muganda, 2011). In the words of (Mabrouk and Mamoghli, 2010) the effect of financial innovations on financial performance of commercial banks is not fully examined. Francisco (2007)notes that financial innovations leads to the development of the banking industry in an economy. However, the researcher does not expressly relate the effect of the innovations on the performance of commercial banks.

Kenya has experienced tremendous technological changes in the past few years. The CBK (2014) notes that there has been a rise in use of electronic banking facilities due to adoption of computer technology. A number of studied have been undertaken in Kenya with an aim of establishing the effect of financial innovations on performance of entities. Koriret *et al* (2014) found that there was a significant relationship between financial innovations and bank's performance.Ngumi(2013) used primary data and secondary data collected from 2009 to 2012 when the financial innovations were relatively new in the banking industry. The study established that there was a positive effect on financial innovations on total income, return on assets, profitability and customer deposits. However, the study established that the use of mobile phones had a high moderating effect on performance than internet banking. Muriru & Ngari (2014) noted that commercial banks have adopted credit cards, mobile banking and agency banking but this did not specifically lead to improved financial performance. On a different dimension, Simiyu, Ndiang'ui & Ngugi (2014) recommended that a study be done on the effect of financial innovations on customer satisfaction and performance of commercial banks. It is for this very reason that this study is was carried out on the performance of commercial bank.

Evidently therefore, there is a need for more studies on this subject. This is because of the differing results (Ngumi, 2013: Muriru & Ngari, 2014). It is also important to note that the prior studies had different variables whose outcome may be different when other variables are introduced in the equation. Additionally, other factors held constant, it is expected that adoption of financial innovations improves the performance of commercial banks. However, there have been reports of banks reporting reduced profits and other have been put under receivership even though they have adopted financial iinovations. This study considered electronic funds transfers, mobile banking and Internet banking and their influence on the performance of commercial banks both in combinations and singly. Further, the numbers of studies that have been carried out on this subject are few in developing countries.

1.3 Objectives of the study

1.3.1 General Objective

The general objective of this study was to establish the effect of financial innovations on financial performance of commercial banks in Kenya.

1.3.2 Specific Objectives

This study had the following specific objectives;

1. To determine the effect of electronic fund transfers on financial performance of commercial banks in Kenya.
2. To determine the effect of mobile banking on financial performance of commercial banks in Kenya.
3. To determine the effect of internet banking and financial performance of commercial banks in Kenya.

1.4 Hypotheses of the Study

This study had sought to test the following hypothesis;

$H_0$1: *There is no significant relationship between electronic funds transfer and financial performance of commercial banks in Kenya.*

$H_0$2: *There is no significant effect of mobile banking on the performance of commercial banks in Kenya.*

$H_0$3: *There is no significant effect of internet banking on the performance of commercial Banks in Kenya in Kenya.*

1.5 Justification of the Study

Commercial banks are a pillar to the financial system of any country. They accept deposits from individuals and institutional investors. In return they grant loans to borrowers for interests. Thus, their role in the economy is undeniable. Therefore the study on the effect of financial innovations on financial performance of commercial banks is justified. This study w collected secondary data and analysed it with the aim of meeting the objectives. By undertaking this study, commercial banks in Kenya got information on the various benefit of being financially innovative; this is the central theme of this study.

1.6 Significance of the Study

The researcher believes that this study may be of help to the following:

1.6.1 Researchers and Scholars

This study is source of information for researchers and scholars. This study has critically discussed issues around financial innovations and banks financial performance. These vital discussions will be used by future researchers and scholars who will be looking on information about these subjects. Also, this study will be used as basis for further research. Students carrying out researches on this field of financial innovations, banks and banks performance will benefit in a great way by getting secondary data that will in this study.

1.6.2 Commercial Banks

This study has of helped commercial banks in Kenya. The researcher documented the various ways and means of financial innovations. Thus, commercial banks in Kenya have found a great deal of helpful information and how to enhance their financial innovations in order to enjoy the benefits of innovations. Appropriate financial innovations have enhanced the financial performance of commercial banks. To the least, this study has a guide to the top management on how to improve the financial performance of the banks through financial innovations.

1.6.3 Business advisors

This study has been of use to business advisors who are advising in the line of commercial banks and other financial institutions. This is because; carried out an analysis of the effects of financial innovations on performance of commercial banks.

1.6.4 Other Financial Institutions

This study has been of great use to not only the commercial banks but also to other financial institutions such as microfinance banks and other financial services providers. This is because they operate in the same industry and may enjoy the same benefits from financial innovations as the commercial banks.

1.6.5 The Government and Policy Makers

This study is of use to the government through its state departments for example, the Central Bank of Kenya. The study contained valuable information that will helped the policy makers to set rules governing electronic funds transfers, mobile banking, internet banking and agency banking operations. Further such information on the benefits of these innovations and their challenges will enable the CBK to make rules and regulations that would promote innovativeness in the banking industry.

1.7 Scope of the Study

This study examined 12 licensed commercial banks that are regulated by the CBB and made use of the published financial statements that are in the custody of the Central Bank of Kenya. The study used secondary data from year 2009 to 2016. The financial innovations considered in this study were; electronic funds transfer, internet banking and mobile banking. On the other hand the financial performance of banks was taken as return on assets. This study adopted secondary data only that was collected from the CBK statistics and Banks supervisory reports.

1.8 Basic Assumptions of the Study

This study assumed that the secondary data that was used for data analysis was correct; up to date represented the general trend on banks financial innovations and financial performance. More so, the study made the assumption that it was possible to alienate other factors that may have an effected on the financial performance of commercial banks. Central bank of Kenya allowed the study to be conducted since they made all report accessible.

1.9De-limitations of the Study

For an academic research delimitation has been defined as the process of reducing the study population and area to a manageable size. Delimitations define the scope and boundaries of a certain study (Leeds, 2010). This research was delimited in terms of the scope of the problem, population, sample size and the objectives. Participation of this study was delimited to all licensed banks that are regulated by the CBK. This study will also be delimited to electronic funds transfer, mobile banking, internet banking and agency banking.

1.10 Organization of the Study

This research study is organized in five chapters. Chapter one contains the background to the research study, presents the statement of problem, objectives and research hypotheses. Also, the chapter has the significance, justifications, limitations and delimitations of the study. Chapter two comprises the literature review on the different aspects subtle to the determinants of government yields. The chapter is globally organized into theoretical background and empirical reviews of the specific objectives. Chapter three outlines the methodology adopted by the study in collecting and analysing data while encompassing the data collection instruments, the target population and the sample size. Chapter four describes the data analysis techniques, the findings and interpretations respective to the study's objectives. Chapter five harbours the research study's conclusions, discussions, recommendations and ultimately suggestions for further reading and research are given.

1.11Summary of the Chapter

This chapter has introduced the study on the effect of financial innovations on financial performance of commercial banks in Kenya. Financial innovation has been defined as the development of new financial products or an improvement of the financial processes. The chapter also, has outline the statement of the problem and clearly shown the need for undertaking this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains critically reviews the literature that is pertinent to the study. The chapter is organised into the following areas; Theoretical review, empirical review of the variable, gaps in literature and a conceptual framework is developed. At the end the gaps in literature reviews are articulated and a summary of literature review is presented too.

2.2 Theoretical Review

Aguilar (2009), notes that a theoretical framework is fundamental in a study for the purpose of identification of the variables to be evaluated in a particular study. According to Dawson (2006) poses that a theory is the basis of generalization of a phenomenon. Thus it is true to suffice that theories helps in making general observations about things. This study will be based on the following theories: Schumpeter theory of innovations,

2.2.1 Schumpeter Theory of Innovations

According to Schumpeter (1934) chances of profits could be created by entrepreneurs who were independent. Schumpeter argued that this was particularly observed from independent inventors or from people who were in Research and Development engineering. Consequently, due to the abnormal profits, new groups of imitators would join and lower the profits as a result of the innovation. However, Schumpeter idealised that before equilibrium could be reached, there resulted into a new set of innovation that would ultimate another business cycle. Thus, at any point in time, there is something new being innovated in the economy and the financial sector is not exempted.

This theory has a central theme that entrepreneurship has a role in searching for new opportunities and creating utility in the economy. Further, the author argues that there is a difference between invention and innovation. To this end, Schumpeter (1934) views invention as the seeking of new dimensions that are potentially adopted by entrepreneurs while innovations basically are seen as the forces leading to growths in a self-propagating system. This theory posits that innovations are sought by the daring individuals who have the zeal to take risks by self-will.

Schumpeter (1934) puts it that innovations are always happening in the industry and for this reason, institutions needs to be cognizant of them. The theory argues that even before innovations have been accepted by firms other innovations usually emerge leading to a new cycle again. It is for this reason that there are a variety of innovations that commercial banks implement in order to boost their financial performance. For instance, a commercial bank may at a single point in time adopt agency banking and mobile banking.

Financial innovation is involved in creating new opportunities for more profits while at the same shouldering the hazards linked to its existence. New dimensions present risks and thus banks must have mitigating measures. As discussed by Schumpeter (1934),innovations are enhanced by entrepreneurs who are independent and are willing to take risks as an act of will. This theory is important to this study since it helps in explaining why commercial banks are involved in new innovations and also discusses on the causes of innovations.

2.2.2 Constraint-induced Financial Innovation Theory

Sibler(1983) argues that the entities have a purpose of maximizing their profits and this is the main factor contributing to innovations. However, the author notes that there are inherent restrictions to towards profit maximization. These includes: policies governing the sector and internal factors including the style of management adopted by the organizations. This theory is very relevant to this study since the author narrows down to innovations in the banking sector.

According to Sibler (1983), the banking sector is strictly regulated and thus has restrictions towards innovations and thus may limit innovations. The presence of these restrictions is two folds: reduce the banks' abilities to venture into new innovations and also may reduce the efficiency of the banking institutions and it is for this reason that commercial banks will always, constantly act to keep them off. The theory thus is important in that it helps shed light on the reasons that make banks venture into financial innovations. More so, banks in Kenya are strictly regulated by the central banks of Kenya and may not be free to adopt all financial innovations without the express approval of the regulator. Financial innovations have been noted as per the theory to be a move to increase the profits of the financial institutions. Thus this research will seek to establish the effects of financial innovations on the performance if commercial banks in Kenya.

This theory idealises that innovations are geared towards the alleviation of a certain constraint. In connection to commercial banks in Kenya, there are a variety of constraints arising from internal environment and the external environment. Banking halls operate within stipulated time of the day with rare cases of extension past the normal business hours. Thus, Sibler(1983) indicates that entities must work towards reducing the losses brought about by the constraints. To this end, mobile banking, internet banking and agency banking ensures that customers can transact round the clock. The traditional banks operate in a confined location and with strictness of time. It is due to this shortcoming that led to adoption of technologically enabled means of delivery customer service to customers.

2.2.3 Innovation Diffusion Theory

Innovation Diffusion Theory (IDT) seeks to explain the flow of innovations within an organization. According to Rogers (2003), there are various factors that lead to the diffusion of innovations from one point to another. For instance if there is a relative advantage of the new innovation when compared to the already existing tools, the innovation will be regarded as an improvement and may be adopted in the entire organisation. Also, the compatibility of the innovations is crucial with respect to the already existing tools and practices in that those are that are compatible are easily adopted. Innovations are also weighed on the ease of use, if they can be put on trial before being commenced in full and if their inputs and outputs can be measured with ease. It is important to note that the ease of use is viewed as subjective since expertise is not uniform across all people.

Lundblad and Jennifer (2003), notes that diffusions across the departments of organization may not be probable due to the differences of operations. This theory is crucial to this study since it helps explains how innovation diffuse from one segment of the economy to another or from one department to another within the same organisation. According to Rogers(2003) this theory is based on mainly four elements; innovation, time , communication channels and the social systems effects due to the particular innovation. Hernadez and Mazzon, (2006) notes that innovations are likely to adopted by an entity if they are consistent with the values of the specific entity. This theory explains how innovations are adopted by entities across the industry. In particular, the banking sector is characterised by changing customer preferences and need for timely delivery of services. For this reason, the theory gives insights on how electronic funds transfers and mobile banking has become a common feature in the banking industry. Electronic funds transfer ensures that a customer transactions without having to visit the banking hall in person. Mobile banking on the other is fast and involves the diffusion of the mobile technology from telecommunication industry to the banking sector.

2.3 Financial Innovations and Financial Performance of Commercial Banks

Lin (2008) defines financial performance as the measure of outcomes in meeting of an organisation goals. (Bessler et al., 2008) measures of how an organisation uses it resources to generate income. To this end, financial performance is the expression of the revenues with respect to the resources. Total sales revenue, profits and return on assets are some financial measures. Performance may be measured in terms of financial and non-financial terms (Bahar and Ahmad, 2010). To this end, financial performance may involve such measures as profits after tax and market share and customer satisfaction. Kabira(2011) notes that agency banking ensures that banks saves on the floor for banking halls and saves on salaries since the agency outlets are run by independent agents. Further, agency banking hours may be more and hence more transactions. Thus, agency banking may increase the profits of the banks while keeping the costs at minimum.

A commercial bank's performance may be expressed in terms of its Return on Assets (Cyern, Emre&Asl 2008). Performance of a commercial bank is a function of different externalities operating within the banks environment. The banking industry has a volatile environment and thus banks needs to adjust in order to coup. According to Cicea and Hincu (2009) banks needs to establish proper measures the achievement of the performance objectives.

Batiz-Lazo and Woldesenbet, (2006), notes that financial innovations have a tendency of improving the performance of the institutions in the financial sector. Commercial banks may measure its performance indifferent folds including total income, customer satisfaction and market leadership. The improvement of income is one of the generic goals of profit oriented organisation in that they ensure that they survive and grow over a period of time. Financial innovations leads to improvement of products and product delivery in the banking sector (Alam 2011).

Wen (2011) argues that a higher ROA is an indication that the company is utilising its resources more efficiently. ROA measures the rate at which the organisation is successfully committing its assets to make profits. The commercial banks usually have capital in terms of share capital. The banks invest in assets and thus expect returns on the same. According to Boot &Thakar (2007) innovations if implemented successfully may improve the performance of institutions. In this light, it is important for commercial banks to venture into financial innovations in order to increase their profitability. Colin D. (2008), notes that non-financial measure of performance are also gaining attention in the modern day management. A bank's performance hence should include both financial and non-financial measures. However, Goseelin (2005) notes that non-financial measures are difficult to apply and it is for these reason that most organisations adopt the financial measures. Nevertheless financial measures are equally good measures of performance (Gosselin 2005).

E-banking leads to increased profitability of banks (Sana, Muhammad et at 2011). Electronic banking is a process of delivering banking services through internet connections. Account holders are in a position to view their balance, make payments or request for loan facilities through electronic means. This is beneficial to the banks since e-banking is a selfservice platform (Beck et al 2007). According to Ignacio (2009) reaching customers and meeting their needs is a banks major dilemma. This is because the financial services being sought by different sectors of the economy are different. However, with internet connections most customers may be able to access their accounts online. Online banking is a financial innovation that makes use of the developments in information technology. Thus to the extent of electronic banking, financial innovations may improve the profits and profitability of commercial banks in the economy. Freedman (2000) notes that electronic banking uses new devices in delivering same service that a banking hall may offer.

Financial innovations are important in the banking sector (Tufano, 2002). The author notes that innovations are important to banks that need to secure a competitive edge in the market. Commercial banks operate in a very volatile environment and thus have to keep abreast with technological advancement. At this juncture, it is true to suffice that most financial innovations are enabled by a successful use of new information systems. Mabrouk and Mamoghli (2010), notes that financial innovations are characterised by a first mover advantage. They argues that the commercial bank that is first to provide new products or implement new processes for product delivery will basically enjoy more profits. The reverse case is true in that the banks that adopt the innovations will reap lesser profits than the banks that moved first. Consequently it is important for commercial banks to commit funds thought the R & D department to ensure that new products are realised. Where this is so, the bank in consideration will have a better edge in the market and will improve its performance.

According to Muriungi (2012) technological innovations lead to the expansion of the banking sector as banks can reach more customers and open up new channels of offering services. For instancebanking agency outlets are easier to operate when compared to banking halls. The agency outlets may be situated alongside other businesses and thus commercial banks do not incur any initial costs. These studies provide important aspects of financial innovations in that financial innovation may take different dimensions such as use of ATMs, agency banking, mobile banking and electronic funds transfers. However, the study is centred on agency banking only. This current study had sought to establish the effect of EFTs, Mobile banking and internet banking financial performance of commercial banks in Kenya. Tiwari, Buse and Herstatt (2006) established that mobile banking increases the banks customer base. Their study had sought to find out if mobile banking had an effect on operations and financials of the banks.

There is appositive relationship between innovation and sales output (Kemp et al, 2003). This means that innovation across industries improves the turnover of businesses. Consequently when turnover improves holding other factors constant, the performance of the entity improves. Bettler,(2008) notes that innovations ensure business have short run comparative advantages since other competitors will try to compete with them by coping their products or processes. It is important to note that innovations in the banking sector are easily copied across the industry. To this end, no innovations are solely enjoyed by a company for the long run most entities will get the technology and adopt the new processes. According to Mabrouk and Mamoghli (2010) those banking institutions that adopt new products and new processes have a chance of improving their profitability. Equally, those commercial banks that copy what others have done will enjoy lower profits and efficiency.

According to Roberts and Amit (2003) banks can get competitive advantages if they become financially innovative. Thus, it is seen that innovation can be a means to survival, growth and maintained profitability. Joseph et al (2003), argues that internet banking and agency banking has a positive impact on financial performance of banks. Financial innovations involve exploiting the benefits presented by advanced technology in developing new products of ways of delivering the products. Financial innovation involves committing of funds and thus it is important to carry out a cost benefit analysis.

2.4 Empirical Review

2.4.1 Electronic Fund Transfers and Financial Performance of Commercial Banks

According to Hernado and Nato(2000), innovations in the banking sector leads to increased profits. This is attributed to the idea that financial services such as electronic banking increases the brokerage fees from players in the industry while at the same reducing the number of staff thus lowering operational costs. Abaenewe, ZephChibueze, *et al* (2013), argues that financial innovations have positively influenced the return on Equity of commercial banks in Nigeria. They narrowed down to electronic banking citing that more customer transactions are observed and hence more transaction fees leading more revenues. Rotchanakitumnuai and Speece (2003) notes that electronic banking offers numerous benefits to both banks, investors and individual bank clients can check account balances, transfer money, pay bills, collect receivables and ultimately reduce transaction costs and establish greater control over bank accounts. According to Ovia, (2001) electronic banking has made it flexible for customers to use their monies and information on their accounts. It is possible for customers to access their account at the comforts of their homes or office as long there is internet connectivity. This has reduced movements for them bearing in consideration that time is a scarce resource. To the bank this makes it easier to process large transactions in real time. Such facilities like money transfer work best for the bank since the commission is higher and the risk is low.

The study on the innovations and financial performance in the financial industry was conducted by Mwangi (2013). The study had a general objective of establishing the impact of innovations in the banking sector. The study used descriptive research design. The target population was commercial banks in Nairobi. The study established that innovations had a significance influence on performance of financial institutions in Kenya. Further, the study found out that the use of mobile banking has more effects on performance when compared to internet banking. This study is important since it highlights on the role of innovations in the performance of financial institutions. However, the study did not consider EFTs which forms the scope of this current study. The CBK (2014) documents that there was a significant growth in the banking sector which was largely due to the inclusivity and efficiency in service delivery due to electronic banking.

Mabrouk and Mamoghli (2010) carried out a study aiming at establishing the impact of emerging trends on performance of banks. The study considered the use of ATMs, Mobile banking and other technological mechanisms that facilitate the banking process. The study established that those banks that adopted innovations earlier had superior performance when compared to those that adopted much later. Perhaps, this is because of the first mover advantage. It is important to note that technology changes so fast and if firms take long to adopt, it may be of value because other better forms of technology will have emerged.

In Kenya, Kimingi(2010) conducted a study to establish the role of technological innovations on performance of commercial banks. The target population for the study were all commercial banks. The study adopted descriptive research design where both primary and secondary data were analysed. The study found out that there were various innovations that banks had adopted including: mobile banking and internet banking. Further, it was established that innovations improved the performance of banks by enhancing their profitability and competitiveness in the industry.

A study on the effects of innovations on performance of banks in Kenya was done by Korir (2014). The study used a descriptive research design and had sought to establish if the value of Electronic Funds Transfers, value of RTGS transactions had effect on financial performance of banks. The study revealed that these financial innovations explained a large extent of changes in financial performance of commercial in Kenya.

2.4.2Mobile Banking and Financial Performance of Commercial Banks

According to Nader (2011) established that the fact that commercial banks adopted mobile and internet banking, was not a reason enough to expect more profits. This study had sought to establish the profitability of banks in the Saudi for a period of 10 years. The study tested contradicting results for the various aspects of financial innovations. On one hand, use of mobile banking and Automated teller Machines (ATM) had a positive effect on profitability of commercial banks in Saudi Arabia. On the contrary, availability of these services did not necessarily indicate a chance of more profits. Thus, the study implies that financial innovations may or may not lead to improved financial standings. This instant study seeks to establish the effects of financial innovations on total income and return on assets of commercial banks in Kenya.

Nyangosi and Aora(2011) conducted a study with the aim of examining the impact of information technology and banking performance in Kenya. The study adopted a descriptive research design and had a population of all commercial banks in Kenya. The study established that the use of internet banking and mobile banking had been adopted by most banks. The study found out that use of ATM and mobile banking led to service excellence and thus improved the performance of financial institutions. Further, the study revealed that information technology is an important development in the banking sectors. In as much as this study reveals that use of financial innovations increases the rate of customer satisfaction, it does not indicate whether they lead to better performance. Scholnick (2006) notes that the use of ATMs increases transactions of the large commercial banks hence more business is realized but this is not so for the small banks. It is crucial to note that when the transactions with the bank increases, the income of the bank may increase due to charging of transaction costs. However, some of online banking services are free of charge.

2.4.3 Internet Banking and Financial Performance of Commercial Banks

Simiyu*et al* (2014) did a study on the Effect of Financial Innovations and Operationalization on Market Size in Commercial Banks: A Case Study of Equity Bank, Eldoret Branch. The study had a main purpose of establishing the effect of financial innovations on market size of banks in Kenya. The study adopted a descriptive research design and data was collected through questionnaires and interviews. The study had a target population of 1600 staffs and customers of the bank. The study established that innovations increased the market size and assets of the commercial banks. The study recommended more financial innovations including internet banking that are aimed at meeting customer needs and satisfaction should be enhanced. However, this study has not analysed the effects of financial innovations on return on assets. This study will seek to establish the effects of financial innovations on financial performance of commercial banks in Kenya.

Yin and Zhengzheng (2010)carried a research in China with an aim of analysing the operational changes due to technology innovations. Their study indicated banks that adopted innovations of processes were more profitable. When a bank adopts streamlined operations for instance using internet banking, it may result to low operational costs. Thus, the commercial bank may save on costs hence improving on its performance. Thus, it is a process whose effect on performance of commercial banks needs to be studied. Pearson (2011) notes that financial innovations leads to the exploitation of new markets in the industry. At this juncture, it is valid to say that financial innovations lead to the betterment of the commercial bank under consideration and the entire sector at large but whose contribution to the financial performance of commercial bank has been least studied. De Young et al (2007) studied the effects of e-banking on profitability of US community banks by analysing banks that online banking with those with physical outlets only. The study revealed that e-banking improved the profitability of banks.

A study on the impact of information technology on the banking industry was carried out by Shirley and Sushanta (2006). The study had a general objective of establishing the effects of information technology on the profitability of commercial banks. The study had a target population of 68 US banks and data was collected over a period of 20 years. The study found out that adoption of IT to service delivery may increase the profits due to cost savings. However, the study also found out that the profitability depended on the network effect which if too low would lower the profits of the banks. Thus, the study was not conclusive on the effect of innovations due to technology adoption.

According to Githikwa (2009), financial innovations have an impact on performance of commercial banks in Kenya. The study was conducted with an aim of establishing the effect of financial innovations on the profitability of commercial banks. The study concluded that innovations require resources for them to be implemented and result in income. The study established that financial innovations involve committing resources in order to develop new products and new ways of delivering the banking products and services. To this end, banks may need to hire skilled personnel to implemented and monitor such processes. In as much as the banks need new products, they should consider the utility they are creating for the customers.

Francesca and Claeys (2010), carried out a study with an aim of examining the role of online banking services in contributing to the strategic goals. The study was carried out among 60 large banks operating in the European Union. The study revealed that those banks that had a goal of increasing their market share were likely to adopted financial innovations such as internet banking because they could reach more customers. However, the performance of banks that solely dependent on internet was noted to be low because the banks had spent a lot of money in venturing to internet banking and subsequent labour cost savings could not be sufficient to recoup the initial capital outlay. For this reason, it is important for banks to prudently decide on which financial innovations to adopt.

Malhotra and Singh (2010) carried out a study with the aim of establishing the impact of internet banking on financial performance of commercial in India. The study had a keen interest in establishing whether the period of adoption of internet banking had an impact on performance. Specifically, the study sought to establish whether, banks that had adopted internet banking for longer periods had superior performance over those that had adopted banking for a shortest time period. A multiple regression model was used and 82 banks were selected. The study found out that there was no statistically significant difference among those banks that had adopted internet banking for a longer time than those which had recently adopted internet banking. Further, the regression model established that there internet banking had no effect on financial performance of commercial banks in India.

2.5 Gaps in Literature Review

Several studies were carried out on financial innovations on a global perspective. A number of studies indicated positive relationship between financial innovations and performance of financial institutions in general (Shirley &Sushanta, 2006: Mwangi, 2013 and Githikwa, 2009). Thus, the studies idealised that banks that adopt financial innovations were likely to better their profitability and performance. However, other studies (Nader, 2011 and Scholnick (2006) indicated negative relationships between financial innovation and performance of commercial banks.

Interestingly, it is evident that the studies indicated varying findings. Thus there is a need to carry out a study in order to justify which studies are in agreement with the situation in Kenya in terms of effects of financial innovations and performance of commercial banks in Kenya. For instance one would note that financial innovations have negative effects on financial performance of commercial banks. This is as identified by Nader(2006). However, are these results conclusive? This study had the hypothesis in negative forms, that is, EFT, mobile banking and internet banking have no significant effects on financial performance of commercial banks in Kenya.

Also, the review of literature indicated that only a few financial innovations have been considered. More so, there has not been quite convincing number of researches and studies in Kenya. It is for this reason that this research was undertaken. This research aimed at establishing the effects of financial innovations on performance of commercial banks in Kenya. Further, this study examinedthe effect of internet banking, mobile banking and internet banking on the financial performance of commercial banks in Kenya.

2.6 Conceptual Framework

This study has the following conceptual framework

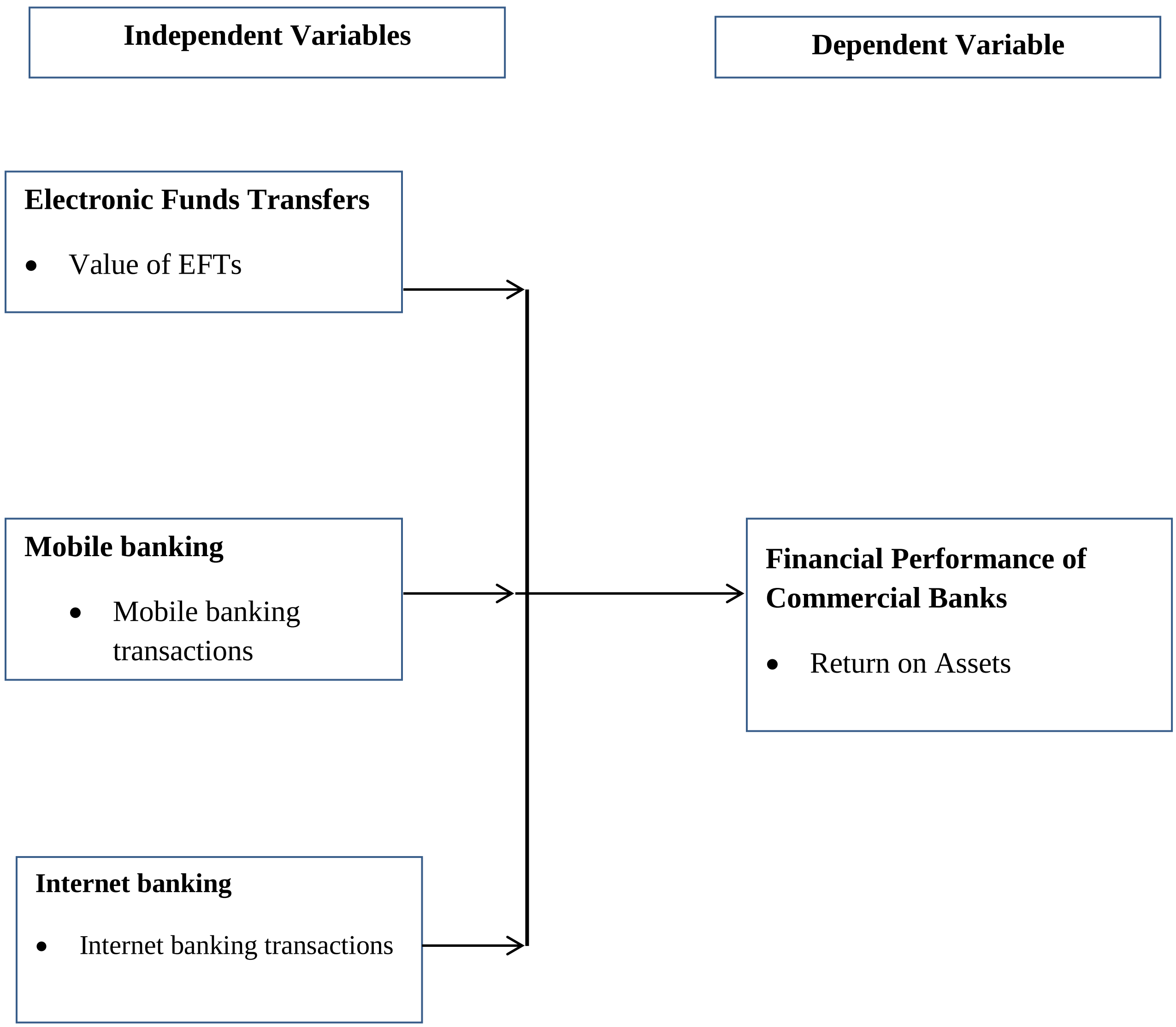

Figure 2. 1 Conceptual Framework

Electronic Funds Transfer (EFTs) is a means of sending money through electronic means without parties being at the same place. This is a kind of financial innovation that uses technological advancements to facilitate banking transactions. EFTs cost savings in that transactions take less time to complete. EFT are low cost initiatives and money transfers is almost for instance in RTGS. The study evaluated the effect of EFTs transactions on performance of commercial banks.

Mobile banking involves the use of mobile phone to transact with the bank. Customers can use their mobile phones to make deposits, pay bills from their bank accounts. Many people have mobile phones and hence can make banking transactions at the comfort of their convenience. Thus, mobile banking may increase the customer base of a bank. Thus, it can be noted that that mobile banking may enhance the performance of commercial banks. Mobile banking may be the most tangible financial innovation process since mobile phones are within the reach of many people.

Internet banking involves transacting online. Most commercial banks have online capabilities through which customers can request for funds transfer and make request for funds payments. Internet banking reduces the costs of running banks in the way that fewer activities are carried out in the banking halls. Internet banking may act as a substitute as branches and thus reduces the operational costs. When operational costs are maintained at optimum, the performance of the commercial banks may improve.

The purpose of this study is to establish the relationship between internet banking, mobile banking, and electronic funds transfers on financial performance of commercial banks in Kenya. The performance of commercial banks may be measured by the return on assets and total income. The return on assets is the measure of how much profit assets are able to generate in a given economic state.

2.7 Operationalization of the Variables

The operationalization of the variable is per Table 2.1

Table 2. 1 Operationalization of the Variables

Category of variable	Variables	Measurements	Type of scale	Type of Analysis	Level of Analysis
Independent variable	Electronic Funds Transfer	Value of transactions of EFTs	Interval	Quantitative	Descriptive analysis
Independent variable	Mobile banking	Number of mobile transactions	Interval	Quantitative	Descriptive analysis
Independent variable	Internet banking	Internet banking transactions	Interval	Quantitative	Descriptive analysis
Dependent variable	Return on Assets	Profit before tax divided by total assets	Interval and ratio	Quantitative	Descriptive analysis

2.8 Summary of the Chapter

This chapter has discussed the theories guiding the study. The chapter has also discussed the empirical findings of other studies. Also gaps in literature review have been brought out. Further a conceptual framework has been developed and a summary of the chapter presented too.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains the research design that was adopted by this study. Also, the target population and sample size and sampling procedure, data collection methods and data analysis and presentation.

3.2 Research Design

This study adopted a descriptive research design. According to (Babbie, 2002), a research design is the setting of conditions for collection of data that seeks to meet the purpose of the study. Mugenda and Mugenda (2003), notes that a descriptive research design is suitable in describing the elements as they exist in the phenomenon under assessment. For this reason a descriptive study best suited for evaluating the influence of financial innovations on financial performance of commercial banks. Kothari (2004) identifies that a descriptive study seeks to correctly describe the traits of the phenomenon under study. Thus, a descriptive study fitted this study since it was establishing the relationship between the independent variables and dependent variables.

3.3 Target Population

According to Mugenda and Mugenda (2004) a target population is the whole set of identifiable items under a given study. The target population for this study was all 41 commercial banks regulated by the Central Bank of Kenya (CBK, 2017)

3.4 Sample Size

The study adopted convenience sampling and data was collected from12 commercial banks which are regarded as large banks by the Central Bank of Kenya. Data was collected for the time period 2009-2016. This period was relevant to this study since it was the time financial innovation was developing in the country. Further in this period, mobile technology and electronic banking were being adopted by telecommunication companies and banks (CBK, 2014). This period was ideally enough for establishing the relationship between financial innovations and performance of commercial banks in Kenya.

3.5 Data Collection Methods

The study analysed secondary data collected from 2009 to 2016. It is in this period that mobile technology and electronic banking were being adopted by telecommunication companies and banks (CBK, 2014). Data was mined from Central Bank of Kenya's National Payments System and Supervisory reports and Banks annual reports.The CBK has a vast library of data due to its supervisory role to commercial banks in Kenya. These data was thus reliable and authentic and was used for analysis. This study sought to assess the influence of financial innovations on the performance of commercial banks in Kenya. On mobile banking, the study measured the number of the mobile banking transactions by the end of each year of analysis. For internet banking, the measure was number of internet banking transactions recorded by use of credit cards debit cards and point of sale transactions by the end of each analysis year, while for electronic funds transfer will be measured as the value of transactions done on electronic funds transfer(EFTs) as at the end of each analysis year. The ratio of Return on Assets(ROA) is the value of earnings before interest and tax divided by the total assets at the end of the financial year.

3.6 Data Analysis and Presentation

Data was analysed by the aid of STATA. Data was analysed into a regression model that showed the relationship between the independent variables and performance of commercial banks. This study used a multiple regression analysis in order to establish the influence of electronic funds transfer, mobile banking and internet banking on the performance of commercial banks. The study usedSTATAsince it gives results of most of the basic outputs that are necessary for a study that uses a descriptive research design. The performance of commercial Banks may be measured in different means such as total revenue, return on equity and return on assets.

In this case, Return on Assets (ROA) was tested against the independent variables as that the multiple linear regression model was developed as;

$$\mathbf{ROA_{it} = \beta_0 + \beta_1 EFT_{it} + \beta_2 MB_{it} + \beta_3 IB_{it} + \varepsilon_{it}}$$

Where;

ROA_{it}= the Return on Assets of commercial banks at t period.

β_0 = the constant to be estimated by the model

β_1, β_2 and β_3 = Coefficient indicating influence of independent variables on the dependent variable.

EFT_{it} = Electronic fund transfers of commercial banks t period

MB_{it} = Mobile banking of commercial banks at t period

IB_{it} = Internet banking of commercial banks at t period

$_{it}$ = 2009………..2016

$_{i}$ = 1, 2, 3………….12

ε = inherent error in the model

Data was presented in terms of descriptive statistics where means, standard deviations and regression coefficients were computed.

3.7 Validity of Research Instruments

3.6.1 Validity Test

Validity refers to the measure of the quality a given instrument of data collection with respect to what it is expected to collect. This study adopted content validity which implies whether a given set of data can lead to meaningful and significant inferences (Creswell, 2003). To enhance validity of the data to be collected, the study engaged an expert in the field of innovations in commercial banks and performance of commercial banks. The data input was then evaluated to gauge if it was quality to allow making of inferences about the effect of the innovations on the financial performance of commercial banks. It was important to involve experts in this study since they provided insights and logical reasoning on the type of data to be collected for analysis.

3.7 Diagnostic Tests

A regression model has certain basic assumptions without which it may not be accepted. This study tested the measures of normality, multi-collinearity test and test of auto-correlation.

3.7.1 Measures of Normality

Measures of normality assess whether data has features of a normal distribution. This study adopted the Jarque-Berra's statistic of skewness and kurtosis to test normality. According to Gujarati (2007) for a normal statistics the measures of skewness and kurtosis are expected to be 0 and close to 3 respectively. It is crucial to note that the skewness and kurtosis measures assess whether the independent variables affects the dependent variable in a normal distribution way.

3.7.2 Multi Collinearity

Multi collinearity problem exists when the independent variables are significantly collinearity to a single or more of the other independent variables. Multi collinearity thus makes it hard to identify the impact of the independent variables individually on the dependent variables. This study used the Variance Inflation Factor (VIF) to test multi collinearity. The VIF where there is no problem of multi collinearity should be less than 10 with tolerance levels of more than 0.1. Multicollinearity tests among electronic funds transfer, mobile banking and internet banking is important because it explains whether variables are influenced by each other. This test is important because it gauges whether the model holds.

3.7.3 Auto Correlation

Auto correlation means whether the independent variables are related to one another. This study used the Durbin-Watson test in order to test for the problem of auto correlation. The DW test result of between1 to 3 implies that data has no auto correlation problem. Auto correlation is very important because explains whether electronic funds transfer, mobile banking and internet banking relate to each other. It is important that there is no auto correlation among electronic funds transfer, mobile banking and internet banking because it improves the model.

3.8 Ethical consideration

This study sought to assess the effects of financial innovations on the performance of commercial banks in Kenya. As such it is important to treat the information with the confidentiality it deserves. Information that was obtained from the banks records and annual reports was treated with care not to cause malice to the banks. It is important to note that in as much as the information may be publicly available, there is a call to safeguard and control on its use. For this reason, the researcher collected data that was pertinent to this study and its use was to be solely for academic purposes. With this matter considered data mining was undertaken with limitation to the aspects of the elements of financial innovations and performances of commercial banks.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1. Introduction

This chapter presents data analysis, findings and discussion on the objectives being sought by the study. The chapter has an analysis of descriptive statistics and an analysis of the regression model and discussion of the findings.

4.2. Descriptive Statistics

The study established the relationship between electronic funds transfers, mobile banking and internet banking on performance of commercial banks in Kenya. The study worked out the measures as indicated in Table 4.1

4.2.1. Return on Assets

The study analysed descriptive statistics for ROA. Data is presented in Table 4.1

Table 4: 1Descriptive Statistics of Return on Assets

sum ROA					
Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	96	3.480313	1.082587	2.03	6.1

The descriptive statistics in Table 4.1 shows the maximum of ROA from 2009 to 2016 being 6.1 %, the minimum being 2.03 %, mean of 3.48 %. The Return on Assets has increased over the years that data was collected. The standard deviation was 1.08 which shows a large variation of performance of commercial banks within the years under consideration. This result indicates that the performance of commercial banks was varying across the years under study and also low in terms of Return on Assets. A ROA mean value of 3.4 % indicates low performance by commercial banks. It is important to note that ROA measures the extent to which assets are being utilised to generate income for the financial institutions.

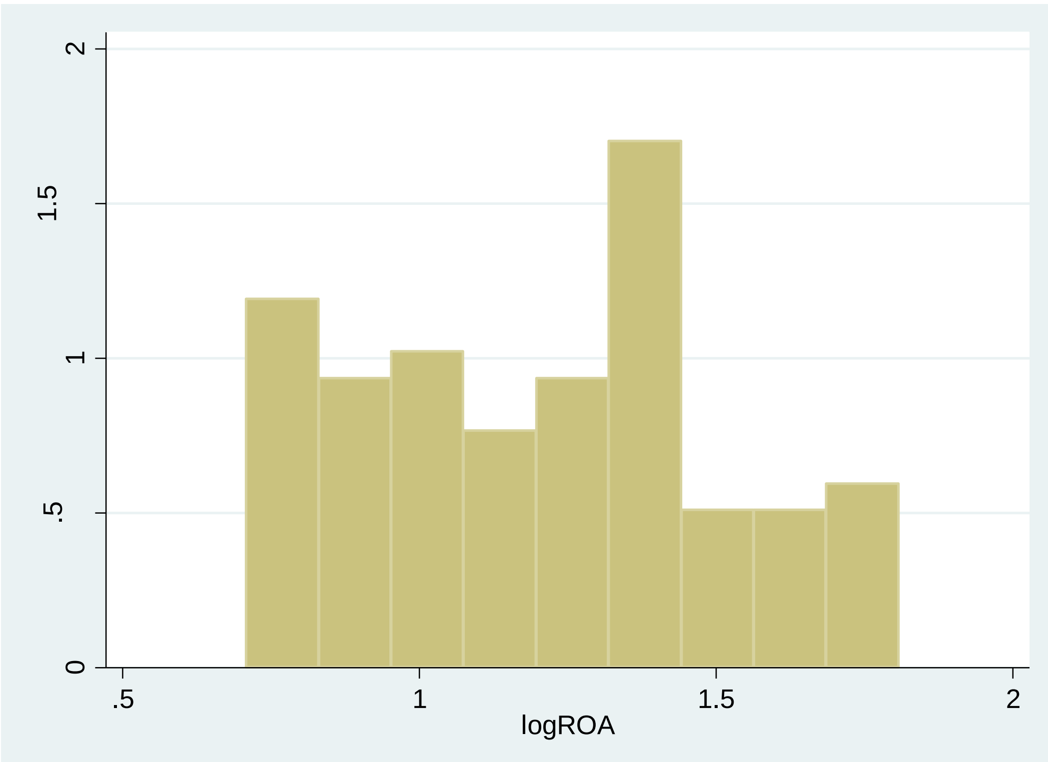

Figure 4: 1 Histogram for Return on Assets

Figure 4.1 shows a histogram that depicts the variations in ROA over time. This finding indicatesthat ROA was not normally distributed over the years.The Return on Asset is a measure of the income that assets generate in a given specific period of time.

4.2.2. Descriptive statistics of Independent Variables

The study analysed the descriptive statistics of electronic funds transfers, mobile banking and internet banking and is represented in Table 4.2

Table 4: 2 Descriptive statistics of Independent Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
EFT	96	36.43271	10.95195	18.044	75.5
MB	96	45.57561	29.60274	1.34683	120.23
IB	96	6003.583	2542.254	2108	15848

Table 4.2 indicates the descriptive statistics for the independent variables. Electronic Funds Transfers had a mean of Kshs36.43billion with a standard deviation of KShs10.95billion. This indicates a great variation in the amount of money transferred electronically. Mobile banking had a mean of 45.57 million transactions with a standard deviation of29.603 million transactions. Internet banking has a mean of 6003thousands transactions with a maximum of 2542.25thousands transactions. An analysis of the trend shows that all the innovations have continued to increase in usage over the years. This may be attributed to the adoption of advanced technology by financial institutions in Kenya, which is a prerequisite of adoption of financial innovations in Kenya.

4.3 Exploratory Data Analysis

Exploratory data analysis was done using graphs that enabled the assessing of the trend of Return of Assets of the sampled commercial banks. This is represented under Table 4.3, shows that there were variations in ROA for the period of 2009 to 2016. The growth plots show that there no significant changes of ROA among the banks over the period. This finding indicates that there were not time related fixed effects. This is because there were no time-related fixed effects in the data among the commercial banks. Further observation shows that there were no significant changes among the observations for ROA of commercial banks. Although in some cases, it appeared ROA had changed significantly, for instance for bank 7, 9 and 10, this effect is does not interfere with the choice of panel data analysis model.

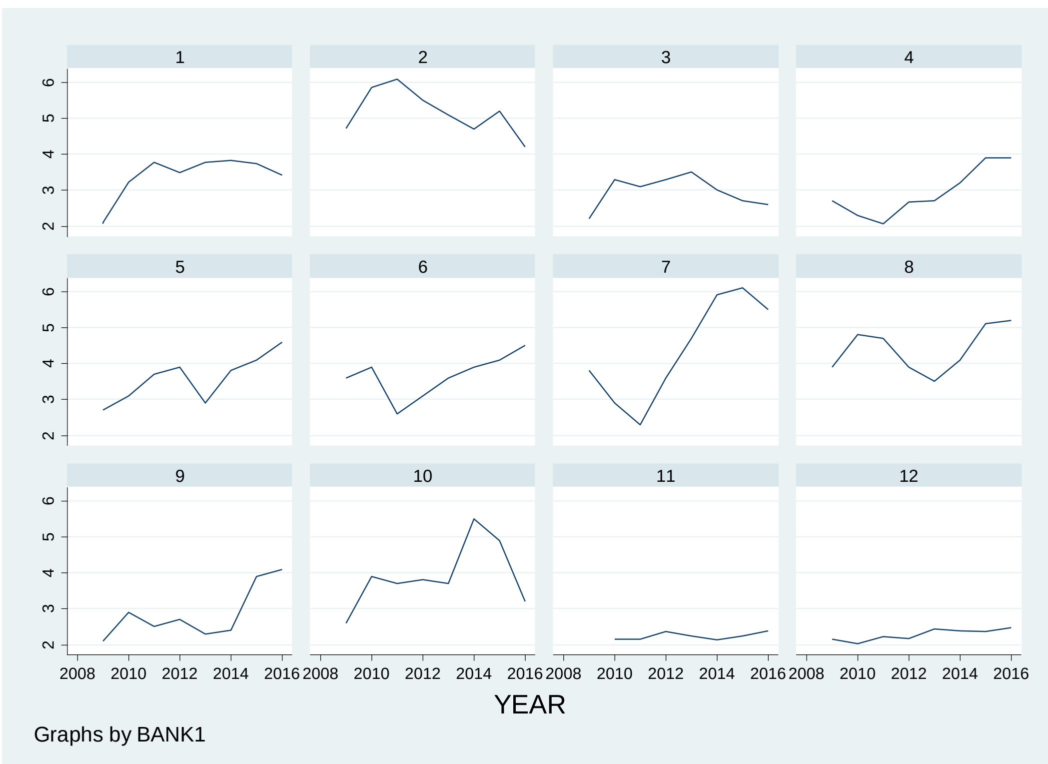

Figure 4: 2 Growth Plots for ROA of Each Bank

Further, the study carried out an Overlain ROA plot showing that the trend among commercial banks not being significantly different. Figure 4.4 indicates the Overlain plot of ROA among the sampled commercial banks in Kenya.

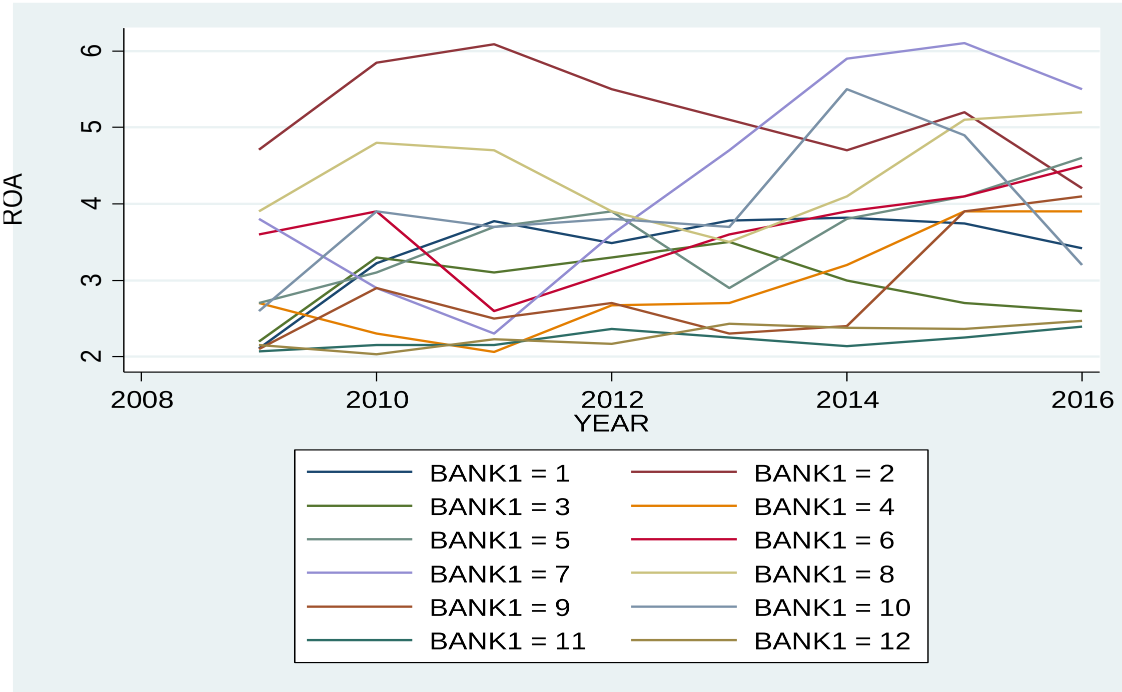

Figure 4: 3 Overlay Plot for Return on Assets

Figure 4.2 indicates the overlaid analysis and shows that the slopes of the individuals commercial banks were not significantly different. Although, the y intercepts are different, it appears that time related effects are not significant and thus negligible.

4.3.1 Pearson Correlation Matrices among Variables

The study further carried out a correlation matrix analysis among the variable. The matrix is represented in Table 4.2. The finding indicates that there was no significant correlation among the variables.

Table 4: 3 A Correlation Matrix Analysis Among the Variable

	logROA	logEFT	logMB	logIB
logROA	1.0000			
logEFT	0.0677	1.0000		
logMB	0.2940	0.2548	1.0000	
logIB	0.3019	-0.2020	0.2172	1.0000

4.4 Measures of Normal Distribution

Table 4: 4 Measures of Normal Distribution

```
. sktest  logROA logEFT logMB logIB
```

Skewness/Kurtosis tests for Normality

				joint	
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
logROA	96	0.6570	0.0001	12.52	0.0019
logEFT	96	0.1516	0.2566	3.44	0.1790
logMB	96	0.0000	0.0359	18.01	0.0001
logIB	96	0.4947	0.1616	2.49	0.2875

Table 4.3 indicates the measures of skewness and kurtosis for the data. The data findings indicate all variables are not normally distributed.

4.5 Regression Model Analysis

The study carried out the following tests to gauge the acceptability of the regression model and its coefficients**.**

4.6 Regression Model Selection

4.6.1 Hausman Test for Model Selection

The study adopted panel data analysis and thus there was a need to determine the appropriate model to use. The study had either to use Random Effects (RE) model or Fixed Effect (FE) mode. Random effects model is used particularly where it is assumed that panel specific effect effects are random and uncorrelated to the predictors. The RE model has an advantage in that it allows the use of time invariant models in panel data analysis. On the other hand, FE model is best used when panel specific effects are known to correlate with the predictor variable. Further, the FE model enables the estimation of panel specific effects but has the shortcoming of eliminating the time invariant variables are eliminated from the analysis. In order to decide on whether to use FE or RE model the study had to carry out a Hausman test for model specification. The findings are represented in Table 4.8

The results indicate that the estimates were significant and therefore the fixed effects model was selected to be used in presenting the panel data analysis results on Return on Assets.

Table 4: 5Hausman Test for Model for Model Selection

```
. hausman fe re

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          S.E.
-------------+----------------------------------------------------------------
      logEFT |    .1726738     .1644166        .0082573        .0097964
       logMB |    .0285004     .0320741       -.0035736        .0023008
       logIB |    .3103295     .2936571        .0166725        .0240898
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       59.71
                Prob>chi2 =      0.0000
```

4.6.2 Heteroscedasticity Test

Heteroscedasticy is a regression model problem that tends to inflate the standard errors in a regression model hence increasing the chance of committing type two errors, that is, the error of failing to reject a null hypothesis. The study carried out the Breusch Pagan. The findings are explained.

Table 4: 6Heteroscedasticity Test

hettest logEFT logMB logIB

Breusch-Pagan / Cook-Weisberg test for Heteroscedasticy

Ho: Constant variance

Variables: logEFT logMB logIB

chi2(3) = 2.55

Prob > chi2 = 0.4670

According to the data findings, the BP value is greater than 0.05 at a significance level of 95 % and hence there is not heteroscedasticity. These findings mean that the error variance is constant, and there is noheteroscedasticity in the data.

4.6.3 Durbin-Watson Test of Autocorrelation

Table 4: 7 Durbin-Watson Test of Autocorrelation

```
. gen time=_n

. tsset time
        time variable:  time, 1 to 98
                delta:  1 unit

. dwstat

Durbin-Watson d-statistic(  4,    96) =  .5285931
```

According to table 4.7 which shows the model summary, the DW value is 0.529. The DW test is used to test the autocorrelation among the independent variables. Auto correlation is the chance that an independent variable depends or influences other independent variables. The DW value of less than 3shows that the independent variables had no autocorrelation with each other.

4.6.4 Test for Multicollinearity

Table 4: 8Tests for Multicollinearity

```
. vif
```

Variable	VIF	1/VIF
logMB	1.16	0.859829
logEFT	1.16	0.865556
logIB	1.13	0.881985
Mean VIF	1.15	

Table 4.8 indicates the Variance Inflation Factor that is used to measure the multicollinearity among the independent variables. The VIF for all the independent variables are not more 10 and this shows that these variables do not have multicollinearity problems. Thus, the regression model has passed all diagnostic tests and allows estimation of the coefficients in the multiple regression model.

4.7 Panel Data Analysis

4.7.1 Model Summary

Table 4.9 shows the fixed effects regression for return on assets. The overall R square is 12.98 which mean that that 12.98 % of the Return on Assets is explained by the independent variables. The within r square is 28.54 % which is means that 28.54 % of the variations within the variables were explained by the model. Further, the between r-squared is 5.95 % which means that 5.95 % of the variations between the variables were explained by the model.

Table 4: 9 Model Summary

```
Fixed-effects (within) regression               Number of obs      =        96
Group variable: BANK1                           Number of groups   =        12

R-sq:  within  = 0.2854                         Obs per group: min =         7
       between = 0.0595                                        avg =       8.0
       overall = 0.1298                                        max =         9

                                                F(3,81)            =     10.78
corr(u_i, Xb)  = -0.1369                        Prob > F           =    0.0000
```

This result agrees with those of Ngari(2013), who identified that credit cards, mobile, internet and agency banking accounted for 61.8 % of the variations in performance of commercial banks in Kenya. However, this study has found a low coefficient of variations. It is important to note that performance of commercial banks is influenced bya number of factors other than those investigated by this study. It is for this reason that the R^2 is not a 100 %. Other factors not assessed by the study accounts the remainder of R^2 from 100 %. Further, Kambua (2014) identified that 55.3 % of variations in performance of commercial banks in Kenya was explained by adoption of technology by commercial banks Kenya.

4.7.2 Regression Coefficients

Table 4: 10 Regression Coefficients

Fixed-effects (within) regression		Number of obs =	96
Group variable: BANK1		Number of groups =	12
R-sq: within = 0.2854		Obs per group: min =	7
between = 0.0595		avg =	8.0
overall = 0.1298		max =	9
		F(3,81) =	10.78
corr(u_i, Xb) = -0.1369		Prob > F =	0.0000

logROA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logEFT	.1726738	.0779894	2.21	0.030	.0174993	.3278483
logMB	.0285004	.0212457	1.34	0.184	-.0137719	.0707728
logIB	.3103295	.0748003	4.15	0.000	.1615004	.4591587
_cons	-2.185539	.7208802	-3.03	0.003	-3.619864	-.7512133
sigma_u	.2504761					
sigma_e	.17400751					
rho	.67448263	(fraction of variance due to u_i)				

F test that all u_i=0: F(11, 81) = 15.56 Prob > F = 0.0000

The study sought to estimate the coefficients of the multiple regression models. The model was specified as

$$\mathbf{ROA_{it} = \beta_0 + \beta_1 EFT_{it} + \beta_2 MB_{it} + \beta_3 IB_{it} + \varepsilon_{it}}$$

Upon fixing the coefficients indicated in Table 4.10, the model becomes

$$\mathbf{ROA = -2.186 + 0.173EFT + 0.029MB + 0.310IB}$$

Where:

-2.186 is the ROA when the other study variables are absent

0.173 is the increase in ROA in response to a unit increase in electronic funds transfers

0.029 is the increase in ROA in response to a unit increase in mobile banking transactions

0.310 is the increase in ROA in response to a unit increase in internet banking transactions.

4.8 Test of Hypothesis

This study had sought to test the following hypothesis;

$H_0$1: *There is no significant relationship between electronic funds transfer and financial performance of commercial banks in Kenya.*

$H_0$2: *There is no significant effect of mobile banking on the performance of commercial banks in Kenya.*

$H_0$3: *There is no significant effect of internet banking on the performance of commercial Banks in Kenya in Kenya.*

Table 4: 11 Test of Hypothesis

logROA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logEFT	.1726738	.0779894	2.21	0.030	.0174993	.3278483
logMB	.0285004	.0212457	1.34	0.184	-.0137719	.0707728
logIB	.3103295	.0748003	4.15	0.000	.1615004	.4591587
_cons	-2.185539	.7208802	-3.03	0.003	-3.619864	-.7512133

Table 4. 11 indicate the P-value that provides the basis for hypothesis evaluation. The study had formulated three hypotheses that were in null form.

4.8.1 Electronic Funds Transfers and Performance of Commercial Banks in Kenya

The P-value for Electronic Funds Transfers is 0.030 which is less than 0.05 hence the null hypothesis $H_0 1$: There is no significant relationship between electronic funds transfer and financial performance of commercial banks in Kenya is rejected. This means that the relationship between electronic funds transfer and performance of commercial banks is statistically significant.

4.8.2 Mobile Banking and Performance of Commercial Banks in Kenya

The P-value for mobile banking is 0.184 which is more than 0.05 hence the null hypothesis $H_0 1$: There is no significant relationship between mobile banking and financial performance of commercial banks in Kenya is rejected. This means that the relationship between mobile banking and performance of commercial banks in Kenya is not statistically significant.

4.8.3 Internet Banking and Performance of Commercial Banks in Kenya

The P-value for internet is 0.000 which is less than 0.05 hence the null hypothesis $H_0 1$: There is significant relationship between internet banking and financial performance of commercial banks in Kenya is rejected. This means that the relationship between internet banking and performance of commercial banks in Kenya is statistically significant.

4.9 Discussion of Findings

The study has established that there exists a positive relationship between electronic funds transfers, mobile banking and internet banking with ROA. This is because the coefficients are positive that is, 0.173, 0.029 and 0.310 respectively.

The study has established a positive relationship between mobile banking and performance of commercial banks in Kenya. Mobile banking ensures that customers can carry out banking transactions conveniently. This result agrees with those of Momanyi(2014) who undertook a study on effect of mobile banking performance of commercial banks in Kenya. A study on effects of innovations by commercial banks was done by Gakure and Ngumi (2013), who identified that the innovations including mobile banking contributed moderately to improvement of profitability of commercial banks in Kenya. Their research showed a coefficient of determination of 47.8% which is the percentage of variations in performance that was explained by innovations that were adopted by the banks. Further, these findings agrees with those of Al-Jabri (2012) who identified that adoption of mobile banking by Saudi Arabia banks led to enhanced performance. Kigen(2010) also identified that mobile banking reduced transaction costs hence improving profitability. On the contrary Agboola (2006) found out that mobile banking was beneficial to banks if the customers trusted the interface which changed from bank to bank.

This study has also established a positive relationship between internet banking and performance of commercial banks in Kenya. Internet banking ensures that customers can access banking services by themselves hence reducing the operational costs for the banks. Internet banking is advantageous in that most transactions can be done online. This finding agrees with those of Gakure and Ngumi (2013) who established that internet banking had a positive relationship with performance of commercial banks. Also, these findings match with those of Malhotra and Singh (2010) who identified that those larger banks that adopted internet banking had a potential for more profits due to reduced operational costs. Interestingly, the same study established that those smaller banks that adopted internet banking had negative impact on their performance. Kagan et al (2005) identified that online banking was advantageous to banks since it ensured efficient delivery of services and thus improved performance.

The study has also established a positive relationship between electronic funds transfers and Return on Assets. This resultdisagrees with those of Shirley and Sushata (2006) who identified that electronic payments can potentially create massive networks that may reduce banks' profits in the United States. Electronic funds transfers involve payments through clearance systems that are initiated by commercial banks. Further, this finding matches with that of Shu and Strassman (2005) who found out that use of electronic payment could not necessarily improve the banks' earnings. On the contrary, according to Sana et al electronic funds transfers reduces costs and saves time consequently improving profitability of commercial banks in Pakistan.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter has the following sections: summary of major findings, conclusions, recommendations and suggestions for further studies.

5.2 Summary of Major Findings

The study had sought to establish the effects of financial innovations and performance of commercial banks in Kenya. The study collected data and analysed through multiple regression model. The study has found that financial innovations have an influence on the performance of commercial banks. The study found an R^2 of 12.98 %. This means that 12.98 % of variations in ROA could be explained by electronic funds transfers, mobile banking and internet banking. 87.32 % of variations are not explained by these variables.

From the multiple regression models, the study has found out that, holding these variables constant, the performance in terms of ROA of commercial banks in Kenya will be -2.186. Further, the study has established a unit increase in electronic funds transfers' leads to a increase of in 17.3 % in ROA, a unit increase in internet banking leads to an increase of 2.85 % in ROA and a unit increase in mobile banking lead to anincrease of 31 % in ROA.

This result matches with those of Gakure and Ngumi(2013) who established that 47.8 % of performance of commercial banks was explained by innovations. However, this current study has a lower coefficient of determinations which is 0.1298. However, it is important to note that their study involved collection and analysis of primary data which may give different results due the difference in nature of the data.

5.2.1 Effect of Electronic Funds Transfer on performance of Commercial Banks

Electronic funds transfer is the transferring money without have the parties to be physically present at a single location. The study had sought to establish the relationship between EFTs transactions and performance of commercial banks in Kenya. The study has found out that there is a positive relationship between EFTs and Return on Assets. The study has thus further rejected the null hypothesis that had been formulated. The study has further found out that the number of EFTs transactions have increased in the period under study.The study also established that the relationship between electronic funds transfer and performance of commercial banks isnot statistically significant.

5.2.2 Effect of Mobile Banking on Performance of Commercial Banks

The study had sought to establish the relationship between mobile banking and performance of commercial banks in Kenya. The study has found out that there exists a positive relationship between mobile banking and performance of commercial banks. Further, the study has accepted the null hypothesis that had been formulated. It is important to note that mobile banking charges are lower than those charged on the counters in banking halls. The study has further identified that the volume of mobile banking transactions has increased over the years during the period of study. The study has further established that mobile banking affects performance of commercial banks in Kenya in a manner that is not statistically significant

5.2.3 Effect of Internet Banking on Performance of Commercial Banks

The study has established that internet banking has a positive relationship with the performance of commercial banks in Kenya. The study had sought to establish whether internet banking transactions had an impact on Return on Assets. The study also has identified that the usage of internet banking has continued to increase over the years. It is prudent to consider that performance of commercial banks cannot only be measured into financial terms. The findings are based on the coefficients that have been established by the regression model.The study has further established that internet banking affects performance of commercial banks in Kenya in a manner that is statistically significant.

5.3 Conclusions

5.3.1 Electronic Funds Transfer and performance of Commercial Banks

The study concludes that EFTs transactions positively have an effect on the performance of commercial banks in Kenya. The study concludes that that value of EFTs transactions has a positive impact on Return on Assets. Perhaps, this may be attributed to the transaction fees obtained where customers transact through the bank using the EFT payments platforms.

5.3.2 Mobile Banking and Performance of Commercial Banks

The study has established that mobile banking positively affects the performance of commercial banks in Kenya. This is indicated by the positive coefficient in the regression model. Perhaps, this is because, mobile banking charges are more when customers transacts through the platform. However, it is important to consider that performance of firms cannot only be measured in terms of financial measures.

5.3.3 Internet Banking and Performance of Commercial Banks

The study also concluded internet banking transactions have a positiveeffect on financial performance of commercial banks. This may be attributed to the fact that internet banking is cheaper than over the counter transactions.

5.4 Limitations of the Study

This study was limited to the fact that financial performance of commercial banks is affected by various factors. Such factors includes; the skills and experience of the current management, government regulations and other macro-economic conditions in the country. Thus, financial innovation does not act in isolation. Rather, it is the confluence of all these factors that influences the performance of commercial banks in Kenya. In the light of this observation the researcher cautions that the financial performance of commercial banks was considered without alienating other factors.

5.5 Recommendations

The study recommends that; commercial banks should adopt financial innovations since they affect their performance. Particularly the study has established a positive relationship between internet banking and performance of commercial banks. For this reason, it is important that commercial banks adopt internet banking. Internet banking enables commercial banks to cut down on costs since customers do not have to travel to the banking halls for financial services. This study recommends that commercial banks invest in technological innovations. It is also recommended that commercial banks adopt financial innovations in order to foster performance.

5.6 Suggestions for Further Research

The study assessed the effect of financial innovations on financial performance of commercial banks in Kenya. The study established that financial innovations have positive effects on the performance of commercial banks. A study can be done to evaluate the factors limiting the adoption of financial innovations by commercial banks in Kenya. This will help the policy makers to set ways that will foster the adoption of financial innovations by financial institutions. Also, the study suggest that another study be done on the effects of financial innovations on performance of commercial banks using non-monetary financial measures such as customer satisfaction and improved brand image.

REFERENCES

Agboola A (2006). Information and Communication Technology (ICT) in Banking Operations in Nigeria: An Evaluation of Recent Experiences.

Al-Jabir, I.M. (2012), Mobile banking adoption: application of diffusion of innovationtheory, *Journal of Electronic Commerce Research*Alexandru, C., Genu, G., & Romanescu,

M.L. (2008). The Assessment of Banking Performances-*Indicators of Performance in Bank Area.* MPRA Paper No. 11600.

Batiz-Lazo, B., &Woldesenbet, K. (2006).The dynamics of product and process innovation in UK banking.*International Journal of Financial Services Management*, *1 (4),* 400-421.

Beaver, G. (2002), Small Business, Entrepreneurship and Enterprise Development, Pearson Education Ltd, United Kingdom.

Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative and Mixed Methods and Approaches* (2nd Ed.). Thousand Oaks, CA: Sage.

Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic management journal*, *23*(12), 1095-1121

Frame, W., & White L. (2008). Empirical Studies of Financial Innovation: Mostly Talk and Not Much Action? *Journal of Economic Literature*, 42, 116-144

Francesca, A., &Claeys, P. (2010).Innovation and performance of European banks adopting Internet. University of Milan and Cass Business School, City University London and University of Barcelona Centre for Banking Research ,Cass Business School, City University London *Working Paper Series ,WP 04/10*

Gakure, R. & Ngumi, P. (2013). Do bank innovations influence profitability of commercial banks in Kenya? *Prime Journal of Social Science (PJSS) ISSN:* 2315-5053. 2(3), 237- 248

Henderson, B. J. and Pearson, N. D., (2011). The dark side of financial innovation: a case study of the pricing of a retail financial product. Journal of Financial Economics, 100,

Ignazio, V. (2007).Financial Deepening and Monetary Policy Transmission Mechanism, BIS Review 124/2007.

J.K, Ngari, J, M (2014). Effects of Financial Innovations on the Financial Performance of Commercial Banks in Kenya, *International Journal of Humanities and Social Science Vol. 4, No. 7; May 2014,*

Kagan A, Acharya RN, Rao LS, Kodepaka V (2005). Does Internet Banking Affect the Performance of Community Banks? Selected Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Providence, Rhode Island July 24-27, 2005

Kigen, K.P. (2010). *The Impact of mobile banking on transaction costs of microfinance institutions,* Unpublished MBA Thesis, University of Nairobi

Kithuka, K., (2012). Factors influencing growth of agency banking in Kenya: the case of Equity bank, Kwale County, Kenya. MA Thesis, University of Nairobi

Kimingi, C. N. (2010). The effects of technological innovations on the financial performance of the commercial banks in Kenya. *Unpublished MBA project,* Universityof Nairobi.

Korir, M. C. (2014). The effect of financial innovations on financial performance of commercial banks in Kenya. *Unpublished MBA project*, University of Nairobi.

Korir, M.C, Sang, W., Shisia A., Mutungu, C. (2015). Financial innovations and performance of commercial banks in Kenya. International Journal of Economics, Commerce and Management United Kingdom Vol. III, Issue 5, May 2015 227-47.

Kumar, A., Nair, A., Parsons, A., & Urdapilleta, E. (2006). Expanding Bank Outreach through Retail Partnerships: Correspondent Banking in Brazil World Bank Working Paper No. 85. The World Bank: Washington DC. 2006

Lawrence, J.W. (2010). Technological Change financial innovation and Financial Regulation in the US, the Challenges for Public policy.

Lerner, J. (2006). The new financial thing: The origins of financial innovations, *Journal of Financial Economics* 79, 233-255.

Lee, H. & Benbasat, D. (2013). Internet vs mobile banking: comparing customer value perceptions, *Business Process Management Journal.*

Mabrouk, A., &Mamoghli, C. (2010). Dynamic of financial innovation and performance of banking firms: Context of an emerging banking industry. *International Research Journal of Finance and Economics, 5*, 2010 Mansfield E. (1968), *the economics of technological change,* New York: W.E. Norton

Mansury, M. A., & Love, J. H. (2008). Innovation, productivity and growth in US business services: A firm-level analysis. *Technovation, 28*(1), 52-62.

Malhotra, P., & Singh, B. (2009). The Impact of internet banking on bank performance and risk: The Indian experience. Eurasian. *Journal of Business and Economics, 43-62.*

Mwania, M., &Muganda, N. (2011).An investigation on the relationship between information technology (IT) conceptualization and bank performance. School of Computer Science & Information Technology, Kimathi University College of Technology, Kenya, *AIBUMA Conference paper, 2011*

Mwangi, R.W. (2011). An Evaluation ofthe Role of Agency Banking In The Performance Of Commercial Banks In Kenya. MBA Thesis, Kenyatta University.

Watiri, T.A (2013) The impact of agency banking on financial performance of Kenyan commercial banks, *MBA project, University of Nairobi*

Muiruri, R.B. (2011). The relationship between financial innovation and financialperformance of commercial banks in Kenya.Unpublished Master of Business Administration Project, University of Nairobi.

Nader, A. (2011). The effect of banking expansion on profit efficiency of Saudi banks. 2nd *International Conference on Business and Economic Research* (2nd ICBER 2011) Proceeding 269.

Nofie, I. (2011). The diffusion of electronic banking in Indonesia, *Manchester Business School* Ngumi,P.M(2013).Effect of bank innovations on financial performance of commercial banks in Kenya.

Noyer, C., (2007).Financial Innovation, Monetary Policy and Financial Stability.Spring Conference, Banque de France.

Porter, M.E. (2004). *Competitive strategy*.*New York edition*.

Waithanji, M.N. (2012). Effect of agent banking as a financial deepening initiative in Kenya. MBA Project, University of Nairobi.

Tiwari, R., Buse, S. & Herstatt, C. (2006) Mobile Banking As Business Strategy: Impact of Mobile Technologies on Customer Behaviour and its Implications for Banks.*Working Paper No. 37. Presented at "Portland International Conference on Management of Engineering and Technology" (PICMET) 2006, 8 – 13 July 2006, Istanbul (Turkey)*

Tufano, P. (2003). Financial innovation. In: Handbook of the Economics of Finance (*Volume 1a: Corporate Finance*). Eds: George Constantinidis, Milton Harris, and Rene Stulz. Elsevier Northn Holland. 307-336

Roberts, P., &Amit, R. (2003). The dynamics of innovative activity and competitive advantage: The case of Australian retail banking, 1981 to 1995. *Organization Science*, *14* (2), 107- 122.

Sana H S, Mohammad KM, Hassan HS, Momina A (2011).The Impact of E-Banking on the Profitability ofBanks: A Study of Pakistani Banks. *Journal of Public Administration and Governance ISSN 2161-7104* 2011, Vol. 1, No. 1

Saleem, Z., & Rashid, K. (2011). Relationship between Customer Satisfaction andMobile Banking Adoption in Pakistan. *International Journal of Trade,Economics and Finance,* 2(6), 537–544.

Shirley JH, Sushanta KM (2006). The Impact of Information Technology on the Banking Industry: Theory and Empirics.

Shu W, Strassmann PA (2005). Does information technology provide banks with profit?, *Information and Management, 42 (5*), 781-787

APPENDIX .A: Letter of Introduction

TO WHOM IT MAY CONCERN,

I am a Master of Science degree student at KCA University and in line with the course requirements I am undertaking a study with the topic "**THE EFFECT OF FINANCIAL INNOVATIONS ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA"**

In this regard, I intend to collect data from your institution in order to meet the objectives of this study.

I pledge that, this data will solely be used for academic purpose.

Thank you,

Yours sincerely,

Signature..

Sarah Muia.

APPENDIX .B: Secondary Data Collection Sheet

		ROA	Value of EFT transactions	Number of Mobile Banking users(transactions)	Internet Banking Transactions
		%	Billions	Millions	Thousands
KCB	2009	2.11	21.723	10.205	8,619.00
	2010	3.22	26.537	21.689	9,353.00
	2011	3.77	29.394	29.118	8,869.00
	2012	3.49	34.34	41.708	8,245.00
	2013	3.78	26.679	55.960	8,433.00
	2014	3.82	32.756	69.138	15,848.00
	2015	3.74	36.325	85.607	9,165.00
	2016	3.42	37.974	107.440	7,639.00
Equity	2009	4.71	23.033	8.567	8,792.00
	2010	5.85	37.356	19.975	6,805.00
	2011	6.09	24.481	30.039	9,798.00
	2012	5.5	27.01	41.177	10,808.00
	2013	5.1	29.181	53.560	12,791.00
	2014	4.7	33.669	68.700	3,472.00
	2015	5.2	47.494	80.998	8,788.00
	2016	4.2	53.257	101.330	5,635.00
DTB	2009	2.2	33.411	8.304	2,735.00
	2010	3.3	47.666	19.920	3,160.00
	2011	3.1	32.584	31.319	3,301.00
	2012	3.3	31.97	40.550	3,477.00
	2013	3.5	31.955	51.890	3,312.00
	2014	3.0	32.773	68.270	3,441.00
	2015	2.7	41.344	82.893	4,701.00
	2016	2.6	48.378	102.750	4,825.00
CBA	2009	2.7	19.058	7.152	4,841.00
	2010	2.3	18.044	18.370	4,859.00
	2011	2.06	26.963	29.446	5,196.00

	2012	2.67	25	39.214	4,834.00
	2013	2.7	29.289	48.940	4,910.00
	2014	3.2	36.116	63.430	5,148.00
	2015	3.9	39.067	78.175	5,155.00
	2016	3.9	42.817	96.320	7,745.00
Standard Chartered Bank,Nairobi	2009	2.7	28.273	6.342	5,839.00
	2010	3.1	21.787	17.010	7,797.00
	2011	3.7	26.631	26.823	6,069.00
	2012	3.9	28.805	39.299	4,246.00
	2013	2.9	33.099	49.700	5,338.00
	2014	3.8	39.558	64.710	6,597.00
	2015	4.1	42.817	78.899	6,069.00
	2016	4.6	43.152	94.120	6,517.00
NIC Bank	2009	3.6	30.587	5.391	6,267.00
	2010	3.9	35.02	16.899	7,021.00
	2011	2.6	22.346	26.915	6,910.00
	2012	3.1	28.102	37.976	7,589.00
	2013	3.6	30.09	49.350	7,071.00
	2014	3.9	32.916	62.710	7,748.00
	2015	4.1	37.878	77.465	6,905.00
	2016	4.5	43.309	93.999	6,481.00
Co-operative Bank of Kenya, Nairobi	2009	3.8	20.881	4.201	8,697.00
	2010	2.9	33.375	15.985	6,827.00
	2011	2.3	25.067	25.034	8,193.00
	2012	3.6	26.996	35.822	7,229.00
	2013	4.7	33.18	47.876	9,586.00
	2014	5.9	40.753	60.030	9,939.00
	2015	6.1	41.336	74.029	11,242.00

	2016	5.5	45.282	90.669	10,355.00
CFC Stanbic Bank	2009	3.9	47.181	4.021	3,829.00
	2010	4.8	67.079	15.049	2,754.00
	2011	4.7	27.794	24.698	3,954.00
	2012	3.9	30.384	35.346	3,236.00
	2013	3.5	33.796	47.966	2,283.00
	2014	4.1	38.101	60.340	3,893.00
	2015	5.1	41.163	74.547	5,336.00
	2016	5.2	42	89.902	4,716.00
African Banking Corporation, Nairobi	2009	2.1	60.074	3.07289	2,141.00
	2010	2.9	67.376	13.7796	3,259.00
	2011	2.5	30	22.6933	3,587.00
	2012	2.7	31.494	32.4254	3,975.00
	2013	2.3	29.929	44.35	3,695.00
	2014	2.4	36.077	55.9993	3,117.00
	2015	3.9	42.243	72.0955	4,935.00
	2016	4.1	44	84.9056	4,052.00
Family Bank, Nairobi	2009	2.6	74.17	120.23	2,108.00
	2010	3.9	31.762	2.398	2,654.00
	2011	3.7	32.584	13.554	2,564.00
	2012	3.8	29.253	24.076	3,668.00
	2013	3.7	35.406	32.730	4,987.00
	2014	5.5	40.026	45.757	5,968.00
	2015	4.9	44.061	52.395	4,572.00
	2016	3.2	43	73.982	6,981.00
Bank of Africa, Nairobi	2009	2.07	51.725	90.348	3,562.00
	2010	2.15	24.964	1.740	3,569.00
	2011	2.15	29.261	11.079	2,864.00

	2012	2.36	30.209	20.809	3,564.00
	2013	2.25	33.69	28.546	4,298.00
	2014	2.14	37.03	41.781	4,597.00
	2015	2.25	38.766	53.468	6,324.00
	2016	2.39	40	65.593	5,981.00
I&M Bank Ltd	2009	2.15	75.5	1.347	6,684.00
	2010	2.03	32.509	10.191	7,307.00
	2011	2.23	36	20.077	6,358.00
	2012	2.17	34.3	28.205	6,647.00
	2013	2.43	37.456	40.245	7,609.00
	2014	2.38	44.003	53.407	7,138.00
	2015	2.36	50.29	67.052	7,793.00
	2016	2.47	54	81.653	8,553.00

APPENDIX .C: Ghant Chart

The time budget for this study is represented in the Ghant chart covering 12 weeks. The chart shows how the various study assignments were undertaken from start to finish. The study was carried out for a period of three months.

Task Name	**Week 1-4**	**Week 5**	**Week 6**	**Week 7-8**	**Week 8-9**	**Week 10-11**	**Week 12**
Writing Proposal							
Defense of proposal							
Post Presentation Reviews							
Data Collection							
Data coding and Editing							
Data analysis							
Report Writing							

APPENDIX .D: Research Budget

NO.	ITEM	AMOUNT(KSHS)
1	**Developing the Study proposal**	
	i. Cost of printing 50 pages for 3 copies @ 10/=	1,500.00
	ii. Miscellaneous	1,000.00
	Sub-Total	**25,000.00**
2	**Data Collection and Report writing**	
	(a) Data Collection and Analysis	
	i. Traveling expenses and data collection	10,000.00
	ii. Stationery and Computer data entry and analysis,	5,000.00
	Sub-Total	**15,000.00**
	(b) Production & Final Document	
	i. Printing 70 pages @ 10/=	700.00
	ii. Photocopying 3 copies @ 3/=	600.00
	iii. Binding 5 copies @ 300/= and Miscellaneous	1,200.00
	Sub-Total	**2,500.00**
	TOTAL EXPENDITURE	**47,500.00**

APPENDIX .E: List of Commercial Banks inKenya

1. African Banking Corporation, Nairobi	2. Bank of Africa Kenya, Nairobi
3. Bank of Baroda, Nairobi	4. Bank of India, Nairobi
5. Barclays Bank of Kenya, Nairobi	6. CFC Stanbic Bank
7. Chase Bank Ltd, Nairobi	8. Citibank, Nairobi
9. City Finance Bank	10. Co-operative Bank of Kenya, Nairobi
11. Commercial Bank of Africa, Nairobi	12. Diamond Trust Bank, Nairobi
13. Consolidated Bank of Kenya Ltd,	14. Dubai Bank Kenya Ltd, Nairobi
15. Credit Bank Ltd, Nairobi	16. Equatorial Commercial Bank Ltd
17. Development Bank of Kenya,	18. Equity Bank,
19. Guardian Bank, Nairobi	20. Family Bank, Nairobi
21. Gulf African Bank Ltd, Nairobi	22. Fidelity (Commercial) Bank Ltd
23. Habib Bank A.G. Zurich.	24. Fina Bank Ltd, Nairobi
25. Habib Bank Ltd, Nairobi	26. First Community Bank Ltd, Nairobi
27. Housing Finance Co. Ltd,	28. Paramount Universal Bank Ltd
29. Imperial Bank, Nairobi	30. Prime Bank Ltd, Nairobi
31. I&M Bank Ltd	32. Southern Credit Banking Corp. Ltd
33. K-Rep Bank Ltd, Nairobi	34. Standard Chartered Bank , Nairobi
35. Kenya Commercial Bank Ltd	36. Trans-National Bank Ltd, Nairobi
37. Middle East Bank, Nairobi	38. UBA Kenya Bank Ltd., Nairobi
39. Victoria Commercial Bank Ltd.	40. NIC Bank
41. M-Oriental Commercial Bank	42. CharterHouse Bank(Under statutory Management