# THE EFFECT OF ELECTRONIC BANKING ON GROWTH OF CUSTOMER DEPOSITS OF MICROFINANCE BANKS IN KENYA

# **FAITH KARIUKI**

A RESEARCH PROJECT SUBMITTED IN PARTIAL FUFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

# **DECLARATION**

This research project is my original work and has not been presented to any other						
institution of higher learning for an award of a degree, diploma or certificate.						
Signature Date.						
Faith Kariuki						
D61/67081/2011						
This research project has been submitted for examination with my approval as the						
University of Nairobi supervisor						
Signature Date.						
Mrs. Winnie Nyamute						
Department of Finance and Accounting						
Lecturer, University of Nairobi						

# **ACKNOWLEDGEMENTS**

This research project could not have been possible without the valuable input of a number of people and groups whom I wish to acknowledge. First and foremost, great thanks to God for all the blessings he showered on me and for being with me throughout the study. The good health and necessary resources were all God's doing.

I wish to express my gratitude to my supervisor: Mrs. Winnie Nyamute for her guidance, professional advice and generosity with her time when it came to discussing issues involved with this project. Wish you God's blessings as you continue to impact knowledge in the field.

I am thankful to the CBK and their staff for their assistance during the period of data collection.

Finally I take this opportunity to express my deep appreciation to my mum (Mary Kariuki) for setting the path and instilling in me values that have seen me through, my son (Phil) and friends who were source of motivation and encouragement during this project.

.

# **DEDICATION**

This project is dedicated to my mum (Mary) & son (Phil Collins) who gave me moral support and encouragement when I was pursuing my studies. I will always value and esteem you highly.

#### **ABSTRACT**

To meet the growing needs of customers, firms have successfully adopted e-banking to enhance the quality of their services and products and become flexible enough to quickly respond to their customer request and market change. The Kenyan banking sector today provides a wide array of products to increase to financial services. Low income customers can borrow and access small loans through mobile banking channels for example Mshwari through Mpesa. ICT-based products and services used by commercial banks include use of SMS banking and pre-paid cards. The study sought to determine the effect of electronic banking on growth of customer deposits of microfinance banks in Kenya.

The study used a descriptive survey to establish the relationship between electronic banking and growth in customer deposits. The study used microfinance banks because of the rapid adoption and use of electronic banking services and products as tools for enhancing their level of competitiveness and growth in customer deposits. The study involved a census survey of nine (9) microfinance banks that had been in operation for five years (2010-2014). The study used secondary sources of data that was obtained from central bank of Kenya audited reports of the nine microfinance banks. Data analysis involved descriptive statistics, correlation analysis and regression analysis.

The descriptive results observed that there was an increase in ATMs of microfinance banks which was is an indication of increased use of electronic banking. The mean score was 6%. The findings therefore conclude that use of electronic banking led to an increase in customer deposits. The study found that there was a strong correlation between the increase in automated teller machines and growth in customer deposits. Increase in ATMs was found to be statistically significant in the model. This is because its p-value was less than 5%. The regression results concluded that effective lending; firm size and operating efficiency were found to be statistically insignificant because their probability (p)-values was above 5%. Further, the study concludes that there was a strong correlation between the increase in automated teller machines and growth in customer deposits. This implies that most customers used electronic banking platforms like mobile phones to deposit their money in their in the bank account. The study was limited to microfinance banks only, the findings obtained herein cannot be used to make generalization in the banking industry. The study recommends that central bank of Kenya should set policies that promote microfinance banks to adopt and use electronic banking as a platform for increasing access to financial services by providing affordable banking services to low income earners who could not afford banking services previously. The study also recommends that microfinance banks should invest in modern technologies as a tool to enhance their competitive abilities against their competitors this will enable them to attract more customers and retain existing ones and thus lead to increased sales and profitability. A comparative study should be conducted to investigate the effect of electronic banking in growth in customer deposits after a period of five years. This is because technology keeps on changing therefore the study recommends that a similar study should be conducted after a period of 5-10 years then findings may be compared upon which reliable conclusion can be drawn.

# TABLE OF CONTENTS

DECLARATION	ii
ACKNOWLEDGEMENTS	iii
DEDICATION	iv
ABSTRACT	v
LIST OF TABLES	viii
LIST OF ABBREVIATIONS AND ACRONYMS	ix
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study	
1.1.1 Electronic Banking	
1.1.2 Growth in Customers Deposits	
1.1.3 The Relationship between Electronic Banking a	
1.1.4 Microfinance Banks in Kenya	_
1.2 Research Problem	
1.3 Research Objective	
1.4 Value of the Study	
21.	
CHAPTER TWO: LITERATURE REVIEW	9
2.1 Introduction	9
2.2 Theoretical Framework	9
2.2.1 Theory of Reasoned Action	9
2.2.2 Technology Acceptance Model	10
2.2.3 Theory of Planned Behavior	11
2.3 Determinants of Growth in Customer Deposits	12
2.3.1 Technology Innovations	12
2.2.2 Demographics Factors	13
2.3.3 Inflation	14
2.4 Empirical Review	14
2.5 Summary of the Literature Review	18
CHAPTER THREE: RESEARCH METHODOLOGY	10
3.1 Introduction	
3.2 Research Design.	

3.3 Population	19
3.4 Data Collection	20
3.5 Data Analysis	20
3.5.1 Tests of Significance	21
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION	23
4.1 Introduction.	
4.2 Descriptive Statistics	23
4.3 Pearson's Correlation Coefficient	
4.4 Regression Analysis and Hypothesis Testing	25
4.4.1 Analysis of Variance	
4.5 Chapter Summary and Discussion	27
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND	
RECOMMENDATIONS	30
5.1 Introduction	30
5.2 Summary of Findings	30
5.3 Conclusion	31
5.4 Limitations	32
5.5 Recommendations	33
5.5.1 Policy Recommendations	33
5.5.2 Suggestions for Further Research	35
REFERENCES	37
APPENDIX I: Data Collection Schedule	41
APPENDIX II: Analyzed Secondary Data from Financial Statemen	nts of
Microfinance Banks in Kenya	42
APPENDIX III: Raw Data for Three Years (2014-2012)	44
APPENDIX IV. List of Microfinance Ranks in Kenya	46

# LIST OF TABLES

Table 4.1 Descriptive Statistics	23
Table 4.2 Pearson's Correlation Coefficient	24
Table 4.3 Model Summary	25
Table 4.4 Analysis of Variance	26
Table 4.5 Model Coefficients	26

# LIST OF ABBREVIATIONS AND ACRONYMS

**AMFI** Association of Microfinance Institutions

**CBK** Central bank of Kenya

**DA** Deposit Asset

IT Information Technology

**OHR** Overhead ratio

**RTGS** Real Time Gross Settlement Systems

SMS Short Messages

**TAM** Technology Acceptance Model

**TPB** Theory of Planned Behavior

**TRA** Theory of Reasoned Action

# **CHAPTER ONE**

#### INTRODUCTION

# 1.1 Background of the Study

The business environment is changing; this has made organizations to embrace change in attempt to serve the growing needs of customers. This is attributable to increasing customer sophistication and their urge for speedy, efficient and accurate delivery of services that has made the banking environment not only dynamic but also becoming complex in nature. Olorunleke (2010) posit that following financial liberalization of 1980's and 1990's, the finance sector faced far-reaching transformation through computerization and improved bank service delivery. Competition with new products became keen within the system while customer sophistication posed a challenge for them, hence the reengineering of processing techniques of business accounts encouraged the automation of financial services especially among new generation of commercial and merchant banks (Akinyele, 2010).

Electronic banking has experienced rapid growth; this has transformed traditional practices in banking (Afolabi, 2009). Changes within the banking environment have engulfed all areas of financial intermediation and financial markets for instance e-finance, e-money, e-banking and e-exchange. Technological advancements have enhanced efficiency in banking operations such as marketing and business strategies. This has resulted to improved access to bank accounts and financial records. As a result of rapid advances in IT and intensive competition in the banking sector, the adoption of e-banking is being increasingly used as a channel of distribution for financial services (Sathye, 1999).

The world has witnessed an upsurge of electronic payment instruments meant to facilitate trade and simplify payments before the introduction of electronic payment; customers had to walk into the banking hall to do transactions of all kind. They had to queue up and spend more hours to talk to a teller to make their transactions. Inconveniences caused by these long queues discourage most customers who sometimes renegade from the queues in annoyance. For many years, bankers, IT experts, entrepreneurs and others have advocated for the replacement of physical cash and the introduction of more flexible, efficient and cost effective retail payment solutions (Siyanbola, 2013).

# 1.1.1 Electronic Banking

E-banking is the term used for new age banking system and it is also called online banking (Auta, 2010). E-banking uses the internet as the delivery channel by which to conduct banking activities, for example, transferring funds, paying bills, viewing checking and savings account balances, paying mortgages and purchasing financial instruments and certificates of deposits (Lee and Lee, 2000).

Electronic banking is the delivery of banking services and products through the use of electronic means irrespective of place, time and distance. Such products and services can include deposit-taking, lending, account management, the provision of financial advice, electronic bill payment, and the provision of other electronic payment products and services such as electronic money (Alagheband, 2006). Electronic banking is also known as the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels.

As has been pointed out by Akinyele and Olorunleke (2010), electronic banking means the provision of information about the bank and its product through a page on the internet. Izogo, Nnaemeka, Ezema and Onuoha (2012) asserts that electronic banking is a means where by banking business is transacted using automated processes and electronic devices such as personal computers, telephones, fax machines, internet, card payments and other electronic channels.

# 1.1.2 Growth in Customers Deposits

According to Kolodinsky (2004) a customer deposit is an amount of money that is deposited into the bank account for safe custody to the customer. The bank receives the money prior earning it. The company receiving the money has an obligation to keep the money safely. The firm treats this money as a liability because this money belongs to the customer. The bank might use information communication technology innovations to enhance customer deposits through opening up channels that allows customers to access their bank accounts without necessarily visiting the banking hall. For instance mobile banking is one of the technology innovations that have increased customer deposits since customers can transfer money to from their Mpesa account to their bank accounts. This enhances convenience to customers who cannot easily access the bank. This in turn leads to increase in customer deposits.

The importance of customer deposits it enables the bank to become liquid and hence assist the bank to carry out its day-to-day operations without disruptions. The bank may also use customer deposits to make investments in profitable ventures in bid to grow and expand its investment portfolio. This enhances profitability of the firm and boosts its financial stability. Growth of customer deposits can be measured by determining the difference in the amount of deposits from one year to the other. Then,

a comparison can be made to establish the trend of growth in customer deposits on whether there is an increase or decrease (Durkin et al., 2008).

# 1.1.3 The Relationship between Electronic Banking and Growth in Deposits

Numerous studies have shown that the introduction of electronic banking has brought remarkable improvement in the ways banking is conducted. For example, Alagheband (2006) in their study, the impact of electronic banking on growth of customer deposits in the Nigerian banking industry found that the introduction of electronic banking innovations opened more channels and opportunities for diverse means of increasing customer deposits. The findings further revealed that these innovations also enhanced efficiency and effectiveness in service delivery since the customers were exempted from visiting the banking hall.

According to Kolodinsky (2004) electronic banking systems has enlarged product lines and also improved delivery channels such as mobile and internet banking. This has provided an opportunity for all classes of customers to save and accumulate their money for future investments. This has boosted growth of customer deposits since these channels are convenient and efficient to access. This is in line with a study conducted by Afolabi (2009) investigated the impact of mobile banking on growth of customer deposits. The findings of this study depicted that there was a positive relationship between use of mobile banking transactions and growth of customer deposits. The study further revealed that use of mobile banking was economical, convenience and efficient according to most of the customers. Most customers revealed that they deposited their money using mobile phone. Through electronic banking, banks can easily interact with their customers through information on their performance and also educating the customers about the products and services

available based on their needs. This encourages customers to invest with the bank since they are confident about its performance and thus improves deposits since customers have a lot of trust with the bank (Al-Gahtani, 2001).

# 1.1.4 Microfinance Banks in Kenya

The Microfinance Act 2006 and the Microfinance Regulations 2008 issued there under sets out the legal, regulatory and supervisory framework for the microfinance industry in Kenya. The Microfinance Act became operational on 2nd of May 2008. The principal object of the Microfinance Act is to regulate the establishment, business and operations of microfinance institutions in Kenya through licensing and supervision. The Act enables Deposit Taking Microfinance Institutions licensed by the Central Bank of Kenya to mobilize savings from the general public, thus promoting competition, efficiency and access. According to Central bank of Kenya as at 1st of May 2015, there are 11 eleven microfinance banks that are licensed to work and operate in Kenya (See Appendix I).

The role of microfinance banks in Kenya is to deepen financial markets and enhancing access to financial services and products by majority of the Kenyans. Electronic banking is one of tools that is current being used by most microfinance banks to improve access to banking services. Technology innovation has brought about fundamental changes in the banking environment especially how the banking operations and functions are executed. This has in turn reduced the costs of banking transactions, improved efficiency, improved access to bank accounts and financial records. Customers especially the low income earners in the rural areas can easily transfer money from their mobile phones through Mpesa and deposit their money in their bank accounts. This has created a culture of savings since it's convenient for the customers (Juma, 2012).

Electronic banking has increased customer deposits by increasing opportunities that encourage all classes of customer to either deposit their savings or open an account. This has attracted most customers even those who thought it was impossible to own an account and deposit as low as KES. 100. Electronic banking enables customers to quickly and easily review account activity, transfer funds, pay bills and deposit checks all from your mobile Device. Mobile banking is part of electronic banking; it is a mobile banking service that enables customers in the rural setting to access their bank accounts anytime, from anywhere (Muyoka, 2014).

#### 1.2 Research Problem

To meet the growing needs of customers, firms have successfully adopted e-banking to enhance the quality of their services and products and become flexible enough to quickly respond to their customer request and market change (Siyanbola, 2013). Sathye (1999) argues that electronic banking enables financial institutions to offer a wide range of products that offer opportunities for improved access to financial services. This in turn helps to improve customer satisfaction.

The Kenyan banking sector today provides a wide array of products to increase to financial services. Low income customers can borrow and access small loans through mobile banking channels for example Mshwari through Mpesa. ICT-based products and services used by commercial banks include use of SMS banking and pre-paid cards. Some cards can be reloaded with more money and can be used for a range of purposes. Some microfinance banks for example Faulu execute Real Time Gross Settlement Systems (RTGS) in less than 24 hours. These products have increased access to credit hence improved customer deposits in the banking sector.

Studies have been done globally, in the region and locally in relation to electronic banking and growth of customer deposits: Caruana (2005) investigated the role of technology on financial deepening among all classes of customers in 45 micro credit financial institutions in Spain. The results proved that technology highly contributed to financial deepening leading to an increase in customer deposits. Chan and Jia (2011) did a study on the effects of mobile banking on financial deepening of banks. The study found that there was a positive relationship between mobile banking and customer deposits. Abubakar (2014) determined the effect of electronic banking on growth of deposit money banks in Nigeria. The study revealed that positive relationships exist between mobile banking and total deposits.

Kinyua (2014) did a study on the effect of electronic banking on the financial performance of Commercial Banks in Kenya. The results of the analysis showed that there was a positive relationship between electronic banking on financial performance of Commercial Banks in Kenya. Mwangi (2014) investigated effect of electronic banking on the financial performance of commercial banks in Kenya. The results of the analysis showed that there was a significant relationship between electronic banking and financial performance of commercial banks in Kenya. Njogu (2014) studied the effect of electronic banking on profitability of commercial banks in Kenya. The study concluded that there was a strong positive relationship between financial performance of commercial banks and electronic banking.

None of the above studies investigated on electronic banking on growth of customer deposits in the context of microfinance banks in Kenya. This study therefore sought to find an answer to the research question: what is the effect of electronic banking on growth if customer deposits of microfinance banks in Kenya?

# 1.3 Research Objective

To determine the effect of electronic banking on growth of customer deposits of microfinance banks in Kenya.

# 1.4 Value of the Study

The findings of this study might be useful in assisting the stakeholders in the banking sector to ascertain whether the introduction of electronic banking has enhanced growth of customer deposits in microfinance banks. The empirical evidence may be used to make recommendations on whether banks should adopt electronic banking to impact positively on growth in customer deposits.

The policy makers might use the findings of this study to set policies that promote adoption of electronic banking by microfinance banks and other institutions in the finance sector to reap the benefits of electronic banking. This study will also help the general public by creating awareness on the benefits of electronic banking and how it leads to an increase in customer deposits.

The study will serve as a reference material for students, academicians, institutions, corporate bodies and corporate managers who are interested in the subject of electronic banking. The findings of the study will also contribute to existing body of knowledge on e-banking and offer opportunity for further research into the area.

# **CHAPTER TWO**

#### LITERATURE REVIEW

#### 2.1 Introduction

This chapter covers the theoretical framework, the determinants of growth of customer deposits, empirical review and the summary of the literature review

#### 2.2 Theoretical Framework

This section covers the theories that support the relationship between electronic banking and growth of customer deposits in microfinance banks in Kenya. These theories include: theory of reasoned action, theory of planned behavior and technology acceptance model.

# 2.2.1 Theory of Reasoned Action

Ajzen and Fishbein (1985) postulated the theory of reasoned action (TRA). This resulted from attitude research from the expectancy value models. Ajzen and Fishbein formulated the TRA after trying to estimate the discrepancy between attitude and behavior. This TRA was related to voluntary behavior. According to this theory individuals are motivated to use technology because of the belief that technology will improve their livelihoods. Ajzen (2002) posit that innovation is influenced by an attitude towards the subjective behavior and subjective norm. A person behavior is influenced by his intention to perform the behavior. The attitude towards performing the specific behavior.

Ajzen (1991) Indicates that attitudes are comprised of beliefs a person accumulates over his lifetime. These beliefs are created from experience, outside information or

from within the self. Mcfarland and Hamilton (2006) note that only a few of these beliefs, however, actually influence attitude. Subjective norm is beliefs about what other will think about the behavior, in other words, the perceived influences of social pressure on an individual to perform or not perform the behavior. The person's belief that specific individual or groups think he should or should not perform the behavior and his motivation to comply with the specific referents.

Aronson et al. (2003) argue that this theory argue that actual behavior is defined by the intention towards that particular behavior. Intention in this case is influenced by attitude and other salient beliefs may influence attitude. The assumption of this theory is that a person's behavior is determined by his or her intention to perform the behavior and that this intention is, in turn, a function of his or her attitude toward the behavior and his or her subjective norm..

# 2.2.2 Technology Acceptance Model

According to Davis (1986) Technology Acceptance Model deals with the prediction of the acceptability of an information system. The purpose of this model is to predict the acceptability of a tool and to identify the modifications which must be brought to the system in order to make it acceptable to users. This model suggests that the acceptability of an information system is determined by two main factors: perceived usefulness and perceived ease of use.

As demonstrated in the theory of reasoned Action, the technology acceptance model postulates that the use of an information system is determined by the behavioral intention, but on the other hand, that the behavioral intention is determined by the person's attitude towards the use of the system and also by his perception of its utility. According to Davis, the attitude of an individual is not the only factor that determines

his use of a system, but is also based on the impact which it may have on his performance.

According to Davis (1986) perceived ease of use also influences in a significant way the attitude of an individual through two main mechanisms: self-efficacy and instrumentality. Self-efficacy is a concept developed by Bandura (1982) which explains that the more a system is easy to use, the greater should be the user's sense of efficacy. A research presented by Davis (1989) to validate his model, demonstrates that the link between the intention to use an information system and perceived usefulness is stronger than perceived ease of use. According to this model, we can therefore expect that the factor which influences the most a user is the perceived usefulness of a tool.

A notable refinement of the TAM model is proposed by (Mc Farland and Hamilton, 2006). Their model assumes that 6 contextual variables: prior experience, other's use, computer anxiety, system quality, task structure, and organizational support affect the dependant variable system usage through 3 mediating variables (computer efficacy, perceived ease of use and perceived usefulness. The model also postulates direct relations between the external variables and system usage and not only mediation through perceived ease of use and perceived usefulness.

# 2.2.3 Theory of Planned Behavior

According to Bandura (1982) the theory of planned behavior (TPB) was developed by Ajzen in 1988. The theory proposes a model which can measure how human actions are guided. It predicts the occurrence of a particular behavior, provided that behavior is intentional. The theory of planned behavior holds that only specific attitudes toward the behavior in question can be expected to predict that behavior. In addition to

measuring attitudes toward the behavior, we also need to measure people's subjective norms their beliefs about how people they care about will view the behavior in question.

Dillon and Morris (1996) the theory of planned behavior is a theory which predicts deliberate behavior, because behavior can be deliberative and planned. Although there is not a perfect relationship between behavioral intention and actual behavior, intention can be used a proxy measure of behavior. This observation is one of the most important contributions of the TPB model compared to previous models of the attitude-behavior relationship (Dillon and Morris, 1996).

The theory is planned behavior is one of the most widely used models in explaining and predicting individual behavior and acceptance of information technology. Theory of planned behavior is an attitude behavior model, which posits that an individual's behavior is determined by perceived behavior control and intention. Attitude, subjective norm and perceived behavior control, in turn, determine intention. The Theory of planned behavior proposed that an individual's intention to perform an act is affected by his attitude toward the act, subjective norms and perceived behavior control (Larcker and Lessig, 1980).

# 2.3 Determinants of Growth in Customer Deposits

There are a number of factors that affect the growth of customer deposits in a bank: These factors are namely: technology innovations and demographic factors.

# 2.3.1 Technology Innovations

Mobile banking is one of the technology innovation tools that have enhanced increase in customer deposits. With mobile banking consumers can easily access their banking services without necessarily having to queue in the banking halls. Mobile banking has opened up a convenient and easily accessible channel for accessing deposits from customers. Customers can easily transfer their money from their mobile phone to their account. Deposit growth is a major indicator of bank growth; a study conducted by Alagheband (2006) depicted a positive relationship between electronic banking and increase in customer deposits.

Siyanbola (2013) puts it that internet banking involves conducting banking transactions on the internet (www) using electronic tools such as the computer without visiting the banking hall. E-commerce is greatly facilitated by internet banking and is mostly used to effect payment. Internet banking like mobile banking also uses the electronic card infrastructure for executing payment instructions and final settlement of goods and services over the internet between the merchants and the customers. Internet banking is one of the technology innovations that improve customer deposits. Internet banking offers easy access to bank accounts and records. Customers from abroad can be able to deposit money into their accounts easily and conveniently.

# 2.2.2 Demographics Factors

According to Atavachi (2013) the demographic factors of customers also affect customer deposits: this include: the age, region, the level of income among other factors. The age of a population affect the level of customer deposits. An old population is more likely to save their money as compared to a young population. Old people are insecure about their future and therefore tend to save more and invest in their future. The young generation do not mind so much about the future and hence they spend more than they save. This negatively affects growth of deposits in financial institutions.

Chan and Chia (2011) indicate that the level of income of consumers also affects banks deposits. Most consumers in the middle class and the high end are more likely to save their money as compared to low income earners since they lack surplus money to save after they deduct their expenditures. Region also affects saving habits especially Muslims who do not believe in interest rates. This might inhibit a culture of saving in a Muslim population and thus might negatively impact on growth of customer deposits in a bank.

#### 2.3.3 Inflation

Inflation is another determinant of customer deposits; inflation may affect savings in a number of ways. Akinyele and Olorunleke (2010) argue that greater uncertainty arises in saving because risk-averse consumers set resources aside as a precaution against possible adverse changes in income and other factors. Therefore, when inflation raises uncertainty regarding future income growth, risk-adverse consumers may increase their precautionary saving. Izogo (2012) explain that savings may rise in inflationary environment if consumers mistake an increase in the general price level for an increase in some relative prices and refrain from buying. Inflation could also influence saving through its impact on real wealth. If consumers attempt to maintain target level of wealth or liquid assets relative to income, saving will rise with inflation.

# 2.4 Empirical Review

Studies have been done in relation to electronic banking and customer deposits. Below are some examples: A study by Caruana (2005) was conducted on the role of technology on financial deepening among all classes of customers in 45 micro credit financial institutions in Spain. A longitudinal study was carried out for a period of 10

years. A regression model was used for data analysis and the results for of the analysis revealed that technology highly contributed to financial deepening leading to an increase in customer deposits.

Santomer and Seater (2007) investigated on the impact of use of internet on customer deposits in Europe, a cross sectional survey was conducted out in 100 banks. Analysis of data was done using a regression model and the results of the analysis revealed that there was a positive relationship between uses of internet on customer deposits.

Ndebbio (2008) studied the effect of technological innovations on growth of commercial banks in selected Saharan Africa Countries, sample of 125 commercial banks was used, secondary sources of data were used and regression was done using a multiple regression model. The results of the analysis showed that there was a positive relationship between technological innovations on growth of commercial banks.

A study was conducted in China by Chan and Jia (2011) on the effects of mobile banking on financial deepening of banks. A descriptive study was conducted to establish the relationship between the effects of mobile banking on financial deepening of commercial banks. A sample survey of 45 commercial banks was used and data analysis was done using a regression model. Data for ten years was used 2003-2012. The results of the analysis confirmed that a positive relationship exists between mobile banking and customer deposits.

Mavungo (2012) studied the evaluation of ICT strategy at standard chartered bank Kenya Limited. An interview guide was developed and filled in by the banks' head of departments that is IT, card center and operations, this formed the raw data. The Data obtained was complemented by researcher own data obtained from annual reports of

the banks' balance sheets covering the period a period of ten years. This allowed for data comparison and a rich data analysis to give valid conclusions. The study findings established that the ICT strategies enhanced the use and the installation of the facilities which are necessary for the effective and the smooth running of the business operations.

Atavachi (2013) investigated the effect of electronic banking on financial performance of deposit taking micro-finance institutions in Kenya. The study adopted a descriptive design where inferential statistics were used in analyzing the data. The study population consist nine registered deposit taking microfinance institutions in Kenya as at June 2013. The primary data was collected through the administration of questionnaires to the staff of these deposit taking microfinance institutions. Secondary data was collected using documentary information from the institutions annual accounts. Both descriptive (frequencies, percentages, mean and standard deviation) and inferential statistics including mean and frequencies was used and data was analyzed using linear regression model. The study found that all the deposit taking microfinance institutions had adopted e- banking technologies and that there exists a negative relationship between electronic banking and financial performance of deposit taking microfinance institutions in Kenya.

Mwangi (2014) carried out a study on the effect of electronic banking on the financial performance of commercial banks in Kenya. The study used a descriptive survey to find out the relationship between electronic banking and financial performance. The study targeted 44 commercial banks in Kenya. Secondary data was sourced from financial statements between year 2009 and 2013. Data was analyzed using regression and correlation. The results of the analysis showed that there was a significant

relationship between electronic banking and financial performance of commercial banks in Kenya.

Kinyua (2014) did a study on the effect of electronic banking on the financial performance of Commercial Banks in Kenya. The researcher did a descriptive survey; this study targeted 44 commercial banks in Kenya where secondary data was used. Data from financial statements between year 2009 and 2013 was used for analysis. A regression model was used for analysis and the results of the analysis showed that there was a positive relationship between electronic banking on financial performance of Commercial Banks in Kenya.

A study by Njogu (2014) determined the effect of electronic banking on profitability of commercial banks in Kenya. A descriptive survey was carried out to find if there is any relationship between electronic banking and profitability of commercial banks in Kenya. The population of the study involved the 43 licensed commercial banks in Kenya. The study covered a period of 5 years from year 2009 to 2013. The study found that there was a strong positive relationship between financial performance of commercial banks and electronic banking.

Abubakar (2014) determined the effect of electronic banking on growth of deposit money banks in Nigeria. The study period was eight years (between 2006-2013). Data was collected from secondary sources through annual reports and statistical bulletin of Central Bank of Nigeria. Electronic banking was measured using the total value of internet and mobile banking while growth was measured using the value of total deposits and total assets of deposit money banks in Nigeria. A total deposit was regressed on internet and mobile banking, while a total asset was regressed on internet and mobile banking using multiple regression technique. The study revealed

that positive relationships exist between mobile banking and total deposits, and between internet banking and total asset while on the other hand, no significant relationships between internet banking and total deposits, and between mobile banking and total asset.

# 2.5 Summary of the Literature Review

From the literature review, the empirical studies and theories show a positive relationship between electronic banking and growth in customer deposits of firms locally and internationally. This is consistent with the hypothesis for this study that forecasts a positive relationship between electronic banking and growth in customer deposits in microfinance banks in Kenya. This is also supported by the three theories of this study namely: theory of reasoned action, theory of planned behavior and technology acceptance model. The studies have not investigated the relationship between electronic banking on growth of customer deposits within the context of microfinance banks in Kenya. This study is geared towards bridging this gap by seeking an answer to the following research question: what is the effect of electronic banking on growth of customer deposits in microfinance banks in Kenya?

# **CHAPTER THREE**

# RESEARCH METHODOLOGY

#### 3.1 Introduction

This chapter covers the research methodology that was used to achieve the objective of the study. It consists: the research design, the study population, data collection and data analysis.

# 3.2 Research Design

Descriptive survey was used for this study since the study involved a survey of all the 11 microfinance banks in Kenya. Kothari (2004) posit that a survey has three characteristics namely; to produce quantitative descriptions of some aspects of the study population in which case it is concerned with establishing relationships between variables. The study used descriptive research design to investigate the relationship between electronic banking and growth in customer deposits in microfinance banks operating in Kenya. The study used microfinance banks because of the rapid adoption and use of electronic banking services and products as tools for enhancing their level of competitiveness and growth in customer deposits.

# 3.3 Population

According to Kothari (2004) population is a total collection of elements or objects in a given population. The population of this study consists of 11 microfinance banks in Kenya (See Appendix I) that are licensed to work and operate in Kenya (CBK, 2015). The study used nine (9) microfinance banks (CBK, 2013) since they were in operation for the last five years.

# 3.4 Data Collection

The study used secondary sources of data. The study used a five year period between 2010-2014. This period was considered sufficient and adequate to obtain an accurate and meaningful report. Secondary data was obtained from central bank supervision reports and financial statements and reports of microfinance banks and the Kenya bureau of statistics publications. The data to be collected is specifically related to the number of customers who transact using technology innovations sources from microfinance banks. This involved the volume of transactions that microfinance banks handle based on mobile banking technology and deposits mobilized using electronic means for instance MPesa to the bank.

# 3.5 Data Analysis

The data collected was cleaned, coded and sorted and then analyzed using Statistical Packages for Social Sciences (SPSS). The study focused on two the main variables which were classified into dependent and independent variables. The dependent variable was measured using the percentage increase in customer's deposits this was achieved by auditing the number of deposit transactions executed using mobile phone.

The Independent variables were; the amount of money deposited using internet transactions per day, increase in customer deposits before and after introduction of internet banking, the number of deposit transactions executed using real time gross settlement schemes per day.

The researcher sought to extend the model as advanced by Njogu (2014) and Mwangi (2014). Below is the analytical model that was used to determine the effect of electronic banking on growth of customer deposits of microfinance banks in Kenya.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \in$$

Where:

Y= Dependent variable is growth of customer deposits. This variable was obtained by computing the change in growth of customer deposits year after year for five years. From the central bank of Kenya records, the percentage for ATM increase has been consolidated for all the nine microfinance banks in Kenya that have been in operation for the last three years (2012-2014).

 $X_1$ = Independent variable was automated teller machines which was measured using the number of ATM machines introduced in a year. From the central bank of Kenya records, the percentage for ATM increase has been consolidated for all the nine microfinance banks that have been in operation for the last three years (2012-2014).

 $.X_2 = is$  a control variable which was used to measure logarithm of assets. This formula was obtained using Microsoft excel as follows= Log (Assets figure)

 $X_3$ = Control variable is the operating efficiency of the bank that was computed using total operating expenses divided by total incomes.

 $X_4$  = Control variable. Is the effective lending rate which is a macroeconomic variable that was computed by dividing interest income with total outstanding gross loans.

 $\beta_0$  = gradient of the regression measuring the amount of the change in y associated with a unit change in x

€ = Error term within a confidence interval of 5%

# 3.5.1 Tests of Significance

From the empirical evidence and the theories, it is evident that there exists a positive relationship between electronic banking and growth of customer deposits. Therefore,

the alternative hypothesis assumed that there was a relationship between electronic banking and growth of customer deposits of microfinance banks in Kenya. The study considered a one-tail test, if the p-value is less than 5% then the alternative hypothesis is true since this meant that there was a positive relationship between the variables and the opposite is true. The tests were performed at 95% degree of confidence.

# **CHAPTER FOUR**

# DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the analysis and findings of this study as set out in the research objective. The findings and the results are presented on the effect of electronic banking on growth of customer deposits of microfinance banks in Kenya. The study used secondary data that was extracted from financial statements published by Central bank of Kenya (CBK).

# **4.2 Descriptive Statistics**

Descriptive statistics was used to describe the quantitative relationship between variables under investigation. The table shows the mean, median, minimum, maximum and standard deviation values. The results are as shown below:

**Table 4.1 Descriptive Statistics** 

#### **Descriptive Statistics**

	Ν	Minimum	Maximum	Mean	Std. Deviation
Growth in customer Deposits	45	.00	.61	.0369	.13237
Effective Lending	45	.00	1.28	.3191	.38299
Firm Size	45	.00	10.43	5.7745	4.43090
Operating Efficiency	45	.00	3.71	.7006	.76130
% Increase in ATM	45	.00	.23	.0060	.03381
Valid N (listwise)	45				

**Source: Research Findings** 

From the above findings in table 4.1 above, it was found that the mean growth of customer deposits was an estimated 4%. This means that growth in customer deposits experienced a rapid growth the last five years. This could be attributable to growth in technology. The mean rate of lending was 32% which implied that there was rapid increase in lending among microfinance banks. The findings also revealed that the logarithm of assets of microfinance banks was an estimated 6% which was an

indication of growth of assets of microfinance banks in Kenya. Further, it was found that operating efficiency mean ratio was 0.7 meaning that most microfinance banks were efficient in their operations since they incurred less costs to generate their income. The findings also observed that there was an increase in ATMs of microfinance banks this is an indication of increased use of electronic banking. The mean score is 6%. The findings therefore conclude that use of electronic banking led to an increase in customer deposits.

# 4.3 Pearson's Correlation Coefficient

The study sought to determine the strength of the relationship between electronic banking and growth of customer deposits of microfinance banks in Kenya. Correlation is denoted as r, and it ranges from -1 to +1. A value of 0 denotes that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variables increases it results into a corresponding increase in the value of the other variables. A value less than 0 indicate a negative association, that is, as the value of one variable increase the value of the other variables declines. This is findings are presented in the table 4.2 below:

**Table 4.2 Pearson's Correlation Coefficient** 

	Growth in Customer deposits	Effective lending	Firm Size	Operating efficiency	% Increase in ATM	Liquidity
Growth in	1					
Customer deposits						
Effective lending	-0.080	1				
Firm size	.204	.470	1			
Operating	001	.602	.405	1		
efficiency						
% increase in	.733	024	.186	.026	1	
ATM						
Liquidity	029	.349	.315	.510	025	1

**Source: Research Findings** 

From the above findings in table in table 4.2 above, the results found that there was no correlation between effective lending, firm size, operating efficiency and liquidity with growth in customer deposits. The correlation scores were as follows: R= -0.080, R=.204,-0.001 and -.029. It was further revealed that there was a strong correlation between the increase in automated teller machines and growth in customer deposits. The correlation score was found to be .733. This is an indication that some of the customers used automated teller machines as platforms for depositing money into the bank. The increased access to ATM could encourage customers to deposit money since they can easily access it in times of need.

# 4.4 Regression Analysis and Hypothesis Testing

**Table 4.3 Model Summary** 

**Model Summary** 

Mode	R	R Square	Adjusted R	Std. Error of
			Square	the Estimate
1	.776 <sup>a</sup>	.603	.563	.08968

a. Predictors: (Constant), Increase in ATM, Operating

Efficiency, Firm Size, Effective Lending

From the above results in table 4.3, coefficient of determination is explained by 60.3% of the variance in the dependent variable which is growth in customer deposits. This means that the model is satisfactory predictor. The multiple correlation coefficients were found to be .776 which implies that there is a strong correlation between the electronic banking and growth in customer deposits of microfinance banks in Kenya.

# 4.4.1 Analysis of Variance

The study conducted analysis of variance to test the goodness of fit for the data below are the results of the findings in the table 4.4 below:

**Table 4.4 Analysis of Variance** 

#### **ANOVA**<sup>a</sup>

Mod	lel	Sum of Squares	df	Mean Square	F	Sig.
	Regression	.488	4	.122	15.159	.000 <sup>b</sup>
1	Residual	.322	40	.008		
	Total	.809	44			

a. Dependent Variable: Growth in Customer Deposits

From the above results in table 4.4, the F-statistics which is used to test the level of significance between the independent and the dependent variable was found to be .0000 which is below 5%. This is an indication that the model is reliable in predicting the relationship between electronic banking and growth in customer deposits of microfinance banks in Kenya.

**Table 4.5 Model Coefficients** 

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		В	Std. Error	Beta		
	(Constant)	004	.025		144	.887
	Effective lending	047	.045	134	-1.047	.301
1	Firm Size	.006	.004	.182	1.569	.125
	Operating Efficiency	.002	.022	.013	.105	.917
	Increase in ATM	2.737	.390	.719	7.010	.000

a. Dependent Variable: Growth in Customer Deposits

The regression model obtained was as follows:

Growth in customer deposits=  $-0.004 + .006X_1 + .002X_2 + 2.737X_3 +$ €

b. Predictors: (Constant), Increase in ATM, Operating Efficiency, Firm Size, Effective Lending

The results found that there is a positive relationship between firm size and operating efficiency, increase in ATM with growth in customer deposits. The means that holding all other factors constant a unit increases in one unit of these variables resulted into a corresponding increase in growth of customer deposits. On the other-hand, effective lending was found to have an inverse relationship with growth in customer deposits which meant that holding all other factors constant a unit increase in effective lending resulted into a corresponding decrease in growth of customer deposits.

The above analysis was conducted at 5% significance level. The criteria for comparing whether the predictor variables were significant in the model was done by comparing the corresponding probability value obtained;  $\alpha$ =0.05. If the probability value was less than  $\alpha$ , then the predictor variable was significant.

From the model coefficients increase in ATMs was found to be statistically significant in the model. This is because its p-value was less than 5%. The results was as follows p=0.000. On the other hand, effective lending, firm size and operating efficiency were found to be statistically insignificant because their probability (p)-values was above 5%. The result were as follows p=0.301, p=.125 and p=.917.

# 4.5 Chapter Summary and Discussion

The findings conclude that the mean growth of customer deposits was an estimated 4%. This means that growth in customer deposits experienced a rapid growth the last five years. This could be attributable to growth in technology. The mean rate of lending was 32% which implied that there was rapid increase in lending among microfinance banks. Logarithm of assets of microfinance banks was an estimated 6% which was an indication of growth of assets of microfinance banks in Kenya.

Operating efficiency had a mean ratio was 0.7 meaning that most microfinance banks were efficient in their operations since they incurred less costs to generate their income. There was an increase in ATMs of microfinance banks which was is an indication of increased use of electronic banking. The mean score is 6%. The findings therefore conclude that use of electronic banking led to an increase in customer deposits.

The correlation results observed that there was no correlation between effective lending, firm size, operating efficiency and liquidity with growth in customer deposits. The correlation scores were as follows: R=-0.080, R=.204,-0.001 and -.029. Further, it was further revealed that there was a strong correlation between the increase in automated teller machines and growth in customer deposits. The correlation score was found to be .733. This implied that most customers used automated teller machines (ATMs) as platforms for depositing money which resulted to growth in customer deposits. The increased access to ATM encouraged customers to deposit money since they could easily access it in times of need. These findings are consistent with Kinyua (2014) who concluded that growth in customer deposits was as a result of adoption of electronic banking among commercial banks in Kenya.

The regression results observed that the coefficient of determination was explained by 60.3% of the variance in the dependent variable which is growth in customer deposits. This implied that the regression model was a good predictor. Analysis of variance concluded that the regression model was statistically significant in explaining the relationship between electronic banking and growth in customer deposits. These findings conform to a study by Njogu (2014) who concluded that there was a statistically significant relationship between internet banking and growth in customer deposits of commercial banks in Kenya. The findings revealed that there was a

positive relationship between firm size and operating efficiency, increase in ATM with growth in customer deposits. The means that holding all other factors constant a unit increases in one unit of these variables resulted into a corresponding increase in growth of customer deposits. On the other-hand, effective lending was found to have an inverse relationship with growth in customer deposits which meant that holding all other factors constant a unit increase in effective lending resulted into a corresponding decrease in growth of customer deposits. Further, from the model coefficients increase in ATMs was found to be statistically significant in the model. This is because its p-value was less than 5%. The results was as follows p=0.000. On the other hand, effective lending, firm size and operating efficiency were found to be statistically insignificant because their probability (p)-values was above 5%. The result were as follows p=0.301, p=.125 and p=.917.

#### **CHAPTER FIVE**

# SUMMARY OF FINDINGS, CONCLUSION AND

#### RECOMMENDATIONS

#### 5.1 Introduction

This chapter provides the results and discussions drawn from the analysis presented in chapter four. The outline of this chapter is as follows: summary of findings, conclusions, limitations, recommendations and areas for further research.

# **5.2 Summary of Findings**

From the descriptive results, growth in customer deposits experienced a rapid growth the last five years. The mean rate of lending was 32% which implied that there was rapid increase in lending among microfinance banks. It was also revealed that the logarithm of assets of microfinance banks attained an estimated growth of 6%. Operating efficiency mean ratio was 0.7 meaning that most microfinance banks were efficient in their operations since they incurred less costs to generate their income. The findings also observed that there was an increase in ATMs of microfinance banks this is an indication of increased use of electronic banking. The mean score is 6%. The findings therefore conclude that use of electronic banking led to an increase in customer deposits. These findings are consistent with Njogu (2014) who concluded that electronic banking was a tool for increasing customer deposits.

The results of Pearson's correlation coefficient found no correlation between effective lending, firm size, operating efficiency and liquidity with growth in customer deposits. The correlation scores were as follows: -0.080, 204,- 0.001 and -.029. On the contrary, there was a strong correlation between the increase in automated teller machines and growth in customer deposits. The correlation score was found to be

.733. This implies that increased access to ATMs encourage customers to deposit money since they can easily access it in times of need. These findings conform to the observations of Abubakar (2014) who indicated that use of ATMs encouraged depositors to deposit money since they could easily access it during times of need.

The regression results pointed out that there was a positive relationship between firm size, operating efficiency and increase in ATM with growth in customer deposits. Effective lending was found to have an inverse relationship with growth in customer deposits. From the model coefficients, increase in ATMs was found to be statistically significant in the model. This is because its p-value was less than 5%. The results was as follows p=0.000. These findings conform to a study by Chan and Jia (2011) who found that there was a statistically significant relationship between use of ATMs and growth in deposits. On the other hand, effective lending, firm size and operating efficiency were found to be statistically insignificant because their probability (p)-values was above 5%. The results were as follows p=0.301, p=.125 and p=.917.

#### **5.3 Conclusion**

The study concludes that electronic banking had contributed to growth in customer deposits. It has opened up various platforms which customers can access their banks accounts without necessarily visiting the banking halls. This is consistent with Abubakar (2014) and Njogu (2014) who concluded that mobile banking mobile banking and technology innovations were some of the key tools used by commercial banks to enhance access to banking services and improve efficiency. The finding observed that growth customer in deposits was tremendously the last five years in most microfinance banks; this was attributed to a huge investment in technology by microfinance banks in Kenya.

Further, the study concludes that there was a strong correlation between the increase in automated teller machines and growth in customer deposits. This implies that most customers used electronic banking platforms like mobile phones to deposit their money in their in the bank account. This led to an increase in customer deposits. These findings are consistent with Kinyua (2014) who concluded that there was a positive correlation between electronic banking and financial performance of commercial Banks in Kenya. The study also concluded that most microfinance banks in Kenya are investing in electronic innovations for example use of debit cards, use of ATMs and Kenswitch which makes it easier to withdrawal money from the bank. These electronic innovations have lowered the cost of opening an account and thus enabling the low income earners to open an account.

#### **5.4 Limitations**

The study was limited to microfinance banks only. The banking sector consist of SACCOS, commercial banks among other non-banking institutions that serve within the framework of banking industry therefore, the findings obtained herein cannot be used to make generalization in the banking industry.

The study covered a period of five years (2010-2014) only. It is worth noting that technology is very dynamic and it keeps on changing, it would be appropriate for the future researchers to consider investigating this topic after a period of five years in order to find out whether the findings will still hold. This will help to draw more conclusive and reliable findings.

The study limited itself to five variables these are growth in customer deposits, automated teller machines, firm size, operating efficiency and effective lending. These variables are not exhaustive because growth in customer deposits is affected by

various macroeconomic variables for example: technology, banking regulations, politics and policies among others.

The study used secondary data which was difficult to get, the researcher had to look for someone who works with central bank of Kenya to assist in data collection. This took a long period of time. The data for the percentage increase in ATMs and growth in customer deposits were consolidated for all the microfinance banks this was challenging especially when running the data using SPSS.

The study utilized secondary data sources which is historical in nature and might not necessarily reflect the exact needs of the study. This might negatively affect the accuracy and reliability of the relationship between electronic banking and growth in customer deposits of microfinance banks in Kenya which might have impacted negatively on the findings drawn in this study.

#### **5.5 Recommendations**

## **5.5.1 Policy Recommendations**

The study recommends that central bank of Kenya should set policies that promote microfinance banks to adopt and use electronic banking as a platform for increasing access to financial services by providing affordable banking services to low income earners who could not afford banking services previously.

The study also recommends that microfinance banks should invest in modern technologies as a tool to enhance their competitive abilities against their competitors this will enable them to attract more customers and retain existing ones and thus lead to increased sales and profitability.

The empirical findings in this study might be used to guide in policy setting. The findings have concluded that electronic banking contributes to growth in customer deposits. Commercial banks might be interested to use these findings to understand how electronic banking relates to growth in customer deposits in order to create an environment that supports electronic banking to realize the benefits.

The findings have concluded that a positive relationship between electronic banking and growth of customer deposits. The study therefore recommends that commercial banks should improve their deposit growth performance by offering numerous products and services through mobile phones in an effective, efficient and cost effective manner. Commercial banks can consider adopting mobile banking application all mobile phones enabled so that those customers who cannot afford Java enabled mobile phones can also use the product.

Positive relationship also exists between internet banking and automated Teller machines. Therefore commercial banks that seek to increase their customer deposits should put in place Automated Teller machines in all the branches where microfinance banks are located. This will increase access to ATMs many customers, which will eventually contribute to growth in deposits.

The study further recommends Aggressive e-banking awareness through all media of communication should be embarked upon by banks. The awareness should focus on the numerous e-banking products available and their benefits. The awareness campaign should also be extended to non-customers, since there are some e-banking products that do not require a customer to operate an account.

Banks should liaise frequently with their network providers to ensure that there is 24/7 network availability if e-banking adoption must be improved.

The Central Bank of Kenya should ensure that all banks comply with the CBK guidelines on electronic banking. This will ensure that the problems of network unavailability, non-prompt resolution of dispense error issues and other operational challenges are overcome.

# 5.5.2 Suggestions for Further Research

It is worth noting that the world today is very dynamic and technology it keeps on changing therefore the study recommends that a similar study should be conducted after a period of 5-10 years then findings may be compared upon which reliable conclusion can be drawn.

Growth in customer deposits is affected by so many factors other than use of ATms, firm size and operational efficiency. Future researchers should consider incorporating other factors that affect growth in customer deposits for example age of the customers then findings can be compared and conclusions made based on concrete facts.

The study recommends that a comparative study should be conducted in commercial banks to compare findings. Most commercial banks were in existence when electronic banking was first introduced and implemented. This will give clear directions on extent to which electronic banking have contributed to increase in customer deposits over time.

The study further recommends that a similar study should be conducted in the East African Region to find out the effect of electronic banking on growth in customer deposits. This will shed more light on the extent of adoption of electronic banking and some of the electronic banking innovations that are popular used to increase access to customer deposits.

Finally, the study recommends that future researchers should investigate the benefits of electronic banking and how it contributes to financial performance of microfinance banks. This will inform some of the benefits that accrue as a result of use and adoption of modern technologies for example improved efficiency and cost reduction.

## **REFERENCES**

- Abubakar, A. (2014). The effects of electronic banking on growth of deposit money banks in Nigeria, *European Journal of Business and Management*, 2222-1905, 6, 33
- Afolabi, F.O. (2009). The role of information technology in Nigerian banks: a case study of intercontinental bank, Guaranty Trust Bank and First Bank PLC.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. Kuhl and Beckman (Eds.), Action-control: From cognition to behavior (pp. 11-39). Heidelberg: Springer.
- Ajzen, I. (1991). The theory of planned behavior, *organizational behavior and human decision processes*, 45, 179-211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior, *Journal of Applied Social Psychology*, 32, 665-683.
- Akinyele, S.T., & Olorunleke, K. (2010). Technology and Service Quality in the Banking Industry: An empirical study on the various factors of electronic banking, *International Journal of Business Management*, 4(4), 209-221.
- Alagheband, P. (2006). *Adoption of Electronic Banking Services by Iranian Customers, Master's Thesis*, Lulea University of Technology, Sweden.
- Al-Gahtani, S. (2001). The Applicability of Technology Acceptance Model outside North America: An Empirical Test in the United Kingdom, *Information Resource Management Journal*, 14 (3), 37-46.
- Aronson, E., Wilson, T.D. & Akert, R.M. (2003). *Social Psychology*. Upper Saddle River, NJ: Prentice Hall.
- Atavachi, B. S. (2013). Effect of electronic banking on financial performance of deposit taking micro-finance institutions in Kenya, *Unpublished MBA Project*, University of Nairobi

- Bandura, A. (1982). Self-efficacy mechanism in human agency, *American Psychologist*, 37 (2) 122-147.
- Caruana, J. (2005). The role of technology on financial deepening, *Bank of Spain Occasional Paper Series2*, 1-5
- Chan, A. & Jia, T. (2011). The role of mobile banking in financial deepening: Reducing inequality in Financial Services between urban and rural areas. Accenture Institute for High Performance Series.
- Cooper, D. R., & Schindler, P. S. (2006). *Business research methods*. Boston, Mass. [u.a.: McGraw-Hill.
- Davis, F., Bagozzi, R. & Warshaw, R. (1989). User acceptance of computer technology: a comparison of two theoretical models, *Management science*, 35, 1989, 982-1003.
- Dillon, A., & Morris, M. G. (1996). User acceptance of information technology: Theories and models, *Annual Review of Information Science and Technology*, 31, 3-32.
- Durkin, M., Jennings, D., Mulholland, G., & Worthington, S. (2008). Key Influences and Inhibitors on Adoption of the Internet for Banking, *Journal of Retailing* and Consumer Services, 15 (6), 348-357.
- Hauser, J. R. & Shugan, S.M. (1980). Intensity Measures of Consumer Preference, *Operation Research*, 28, 2, 278-320.
- Izogo, E.E., Nnaemeka, O.C. & Ezema, K.S., (2012). Impact of Demographic Variables on Consumers' Adoption of E-banking in Nigeria: An Empirical Investigation, European Journal of Business and Management, 4 (17), 27-39
- Kinyua, D. M. (2014). The effect of electronic banking on the financial performance of Commercial Banks in Kenya, *Unpublished MBA Project*, University of Nairobi

- Kolodinsky, J.M. (2004). The adoption of electronic banking technologies by us consumers international, *Journal of Bank Marketing*, 22 (4), 238-259.
- Kothari, C. R. (2005). *Research methodology: Methods & techniques*. New Delhi: New Age International (P) Ltd.
- Larcker, D.F., & Lessig, V.P. (1980) Perceived Usefulness of Information: A Psychometric Examination, Decision Sciences, 11 (1).
- Lee, E., & Lee, J. (2000). Electronic banking financial services. the acceptance and diffusion of electronic banking technologies, *Consulting and Planning*, 2 (1), 49-60.
- Lepper, M. R. (1982). Microcomputers in education: motivational and social issues.

  Paper presented at the annual meetings of the American psychological association, Washington, D.C.
- Loayza, N., Schmidt-Hebbel, K., & Serven, L. (2000). What Drives Private Saving Across the World, *The Review of Economics and Statistics*, 82 (2), 165-181.
- Mavungo, S. K. (2012). Evaluation of ICT strategy at standard chartered bank Kenya Limited, *Unpublished MBA Project*, University of Nairobi
- Mcfarland, D., & Hamilton, D. (2006). Adding contextual specificity to the technology acceptance model, *Computers in human behavior*, 22(3), 427-447.
- Mwangi, K. D. (2014). The effect of electronic banking on the financial performance of commercial banks in Kenya, *Unpublished MBA Project*, University of Nairobi
- Ndebbio, E.U. (2008). Technological innovations on growth of commercial banks in selected Saharan Africa, *African Economic Research Consortium (AERC)*, *Research Paper 142*: Nairobi
- Njogu, J. N. (2014). The effect of electronic banking on profitability of commercial banks in Kenya, *Unpublished MBA Project*, University of Nairobi

- Njogu, J. W. (2014). The effect of internet banking on customer deposits in commercial banks in Kenya, *Unpublished MBA Project*, University of Nairobi
- Santomero, M. & Seater, J. (2007). Use of internet on customer deposits, *European Journal of Money: Credit and Banking*, 28: 942-960
- Sathye, M. (1999). Adoption of Internet Banking by Australian Consumers: An Empirical Investigation, *International Journal of Bank Marketing*, 17 (7), 324-334.
- Siyanbola, T.T. (2013). The Effect of Cashless Banking on Malawian Economy, E-Canadian Journal of Accounting and Finance, 1 (2), 9-19.

# APPENDIX I: DATA COLLECTION SCHEDULE

Parameters	Company		Year			
	Microfinance	2010	2011	2012	2013	2014
	Banks					
Y=The percentage for ATM increase has been consolidated for all the nine microfinance banks in Kenya that have been in operation for the last three years (2012-2014).						
X <sub>1</sub> =Automated teller machines which was measured using the number of ATM machines introduced in a year. From the central bank of Kenya records, the percentage for ATM increase has been consolidated for all the nine microfinance banks that have been in operation for the last three years (2012-2014).						
X <sub>2</sub> =Logarithm of assets (current plus fixed assets)						
X <sub>3</sub> =Operating efficiency was computed using total operating expenses divided by total incomes						
X <sub>4</sub> =effective lending rate is computed by dividing interest income with total outstanding gross loans.						

# APPENDIX II: ANALYZED SECONDARY DATA FROM FINANCIAL STATEMENTS OF MICROFINANCE BANKS IN KENYA

MFBs		Effective Lending	Growth in Customer Deposits	Firm Size	Operating Efficiency	% increase in ATMs
FAULU	2014	0	0	10.43	0	0
KWFT		0.2	0.45	10.31	0.82	0.07
SMEP		0.22	N/A	9.78	0.81	N/A
REMU		0.51	N/A	8.6	0.89	N/A
RAFIKI		0.47	N/A	8.6	1.11	N/A
UWEZO		1.1	N/A	8.59	0.94	N/A
CENTURY		0.55	N/A	8.36	0.89	N/A
SUMAC		1	N/A	8.2	2.22	N/A
U&I		1.28	N/A	8.14	0.95	N/A
FAULU	2013	0.41	N/A	10.09	0.85	N/A
KWFT		0.29	0.61	10.34	0.81	0.23
SMEP		0.23	N/A	9.4	0.77	N/A
REMU		0.46	N/A	8.53	0.85	N/A
RAFIKI		1.22	N/A	9.57	1.17	N/A
UWEZO		0.62	N/A	8.03	0.83	N/A
CENTURY		1.16	N/A	8.21	1.13	N/A
SUMAC		0.86	N/A	7.9	3.71	N/A
U&I		0.38	N/A	7.9	1.01	N/A
	2012	0.33	N/A	0	0.88	N/A
FAULU		0	N/A	9.88	0	N/A
KWFT		0.23	0.54	10.31	0.79	N/A
SMEP		0.2	N/A	9.36	0.75	N/A
REMU		0.59	N/A	8.26	0.72	N/A
RAFIKI		0.8	N/A	9.26	1.46	N/A
UWEZO		1	N/A	7.89	0.96	N/A
CENTURY		0.4	N/A	0	1.08	N/A
SUMAC		0	N/A	0	0	N/A
U&I		0	N/A	0	0	N/A
FAULU	2011	0	N/A	9.71	0	N/A
KWFT		0.18	N/A	10.23	0.83	N/A
SMEP		0.23	N/A	9.3	0.94	N/A
REMU		0.4	N/A	8.09	0.78	N/A
RAFIKI		0.6	N/A	8.64	1.93	N/A
UWEZO		0	N/A	7.77	2.05	N/A
CENTURY		0.05	N/A	0	2.11	N/A
SUMAC		0	N/A	0	N/A	N/A
U&I		0	N/A	0	N/A	N/A
FAULU	2010	N/A	N/A	9.27	N/A	N/A

KWFT	N/A	N/A	9.79	N/A	N/A
SMEP	N/A	N/A	0	N/A	N/A
REMU	N/A	N/A	0	N/A	N/A
RAFIKI	N/A	N/A	N/A	N/A	N/A
UWEZO	N/A	N/A	N/A	N/A	N/A
CENTURY	N/A	N/A	N/A	N/A	N/A
SUMAC	N/A	N/A	N/A	N/A	N/A
U&I	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A

**Sources: (CBK, 2014)** 

# APPENDIX III: RAW DATA FOR THREE YEARS (2014-2012)

		2013								
MFBs BALANCE SHEET AND PR	l e	1	NT-DECEMB	BER 2013	- Ksh. M					
		FAULU	KWFT	SMEP	REMU	RAFIKI	UWEZO	CENTURY	SUMAC	U&I
		KENYA								
STATEMENT OF FINANCIAL PO	SITION	<b>r</b>								
TOTAL ASSETS		12434	21752	2490	337	3679	107	164	307	80
LIABILITIES										
Customer deposits		7198	5456	1253	174	1412	24	55	99	34
Total Income		2362	5813	618	46	555	24	14	80	16
Total Expenses		1907	4501	526	54	458	27	52	81	14
Operating Profit		455	1312	92	-8	97	-3	-38	-1	2
Net Profit (After Taxes and Be	fore									
Donations)		165	395	6	-6	9	-2	-27	-11	1
	FAULU	FAULU	KWFT	SMEP	REMU	RAFIKI	UWEZO	CENTUR Y	SUMAC	U & I
2014			_	0,		_		0 /	0,	
	KENYA									
NON-PERFORMING LOANS AND Gross Non-Performing Loans as		ES 								
Advances	iu	467	1089	219	33	187	22	6	21	3
Net Non-Performing Loans (c-d	)	191	591	48	24	147	14	1	6	1
LIQUIDITY										
Liquidity Ratio	_	0.23	0.27	0.26	0.67	0.42	0.25	0.244	0.21	0.634
		KWFT	FAULU	RAFIKI	SMEP	REMU	SUMAC	CENTU	UWEZO	U&I
NON-PERFORMING LOANS AND ADVANCE		Ksh.M	Ksh.M	Ksh. M	Ksh.M	Ksh. M	Ksh.M	Ksh. M	Ksh. M	Ksh.M
Gross Non-Performing Loans an Advances	nd	1032	606	307	251	46	46	20	32	7
Net Non-Performing Loans (c-d	)	651	344	231	-27	28	29	3	21	2
LIQUIDITY	-									
Liquidity Ratio		0.24	0.24	0.35	0.29	0.81	0.27	0.261	0.15	0.57
TOTAL ASSETS		26985	20320	5975	2378	395	390	231	160	137
Customer deposits		17119	12646	2873	1325	166	128	127	64	36
Total Income		6433	3882	970	654	69	108	32	37	27
Total Expenses		5292	3134	858	729	65	96	71	35	23
Net Profit After Taxes		474	299	21	-97	3	4	-34	1	2

2012		FAULU	KWFT	SMEP	REMU	RAFIKI	UWEZO	TOTAL	
TOTAL ASSETS		7, 638	20, 384	2, 290	181	1, 838	78	32, 409	
Total Income		1, 688	4, 993	606	26	226	24	7, 563	
Total Expenses		1, 326	3, 730	436	38	218	26	5, 774	
PAT		58	173	54	-7	5	-2	281	
Customer Deposits		2949	2493	1014	61	468	18	7003	
		FAULU	KWFT	SMEP	REMU	RAFIKI	UWEZO	TOTAL	
NON-PERFORMING LOANS AND ADVANCES									
Gross Non-Performing Loans and Advances		26	52 818	274	12	91	8	1465	
Net Non-Performing Loans (c-d)	87 40			146	7	65	1	767	

#### APPENDIX IV: LIST OF MICROFINANCE BANKS IN KENYA

#### 1. Choice Microfinance Bank Limited

Postal Address: P. O. Box 18263 – 00100, Nairobi

Telephone: +254-20-3882206, 20-3882207, 0736662218

Email: info@choicemfb.com, enquiries@choicemfb.com

Website: www.choicemfb.com

Physical Address: Siron Place, Magadi Road, Ongata Rongai

Date Licenced: 13th May 2015 1

Branches: 1

#### 2. Faulu Microfinance Bank Ltd

Postal Address: P. O. Box 60240 – 00200, Nairobi

Telephone: +254-20- 3877290 -3/7, 38721883/4

Fax: +254-20-3867504, 3872183/4; 3867503, 0711 074 074, 0708 111 000

Email: info@faulukenya.com, customercare@faulukenya.com

Website: www.faulukenya.com

Physical Address: Faulu Kenya House, Ngong Lane -Off Ngong Road

Date Licenced:21st May 2009 5

Branches: 32

#### 3. Kenya Women Microfinance Bank Ltd

Postal Address: P. O. Box 4179-00506, Nairobi

Telephone: +254-20- 2470272-5, 2715334/5, 2755340/42

Pilot Line: 070 - 3067000

Email: info@kwftdtm.com, website:www.kwftdtm.comPhysical Address: Akira

House, Kiambere Road, Upper Hill,

Date Licenced: 31st March 2010 4

Branches: 29

#### 4. SMEP Microfinance Bank Ltd

Postal Address: P. O. Box 64063-00620 Nairobi

Telephone: 020-3572799/2055761, 2673327/8, 0711606900

Email: info@smep.co.ke info@smep.co.ke info@smep.co.ke

Website:www.smep.co.ke

Physical Address: SMEP Building - Kirichwa Road, Off Argwings Kodhek Road

Date Licensed: 14th December 2010 3

Branches: 7

#### 5. Remu Microfinance Bank Ltd

Postal Address: P. O. Box 20833-00100 Nairobi

Telephone: 2214483/2215384/ 2215387/8/9, 0733-554555

Email: info@remultd.co.ke info@remultd.co.ke info@remultd.co.ke

Physical Address: Finance House, 14th Floor, Loita Street

Date Licensed: 31st December 2010 2

Branches: 3

#### 6. Rafiki Microfinance Bank Ltd

Postal Address: 12755-00400 Nairobi

Telephone: +254-020-2166401/0730 170 000/0730 170 500

Email: <u>info@rafiki.co.ke</u>
Website: www.rafiki.co.ke

Physical Address: : Rafiki House, Biashara Street

Date Licensed: 14th June 2011

Branches: 17

### 7. Uwezo Microfinance Bank Ltd

Postal Address: 1654-00100 Nairobi Telephone: 2212919, 0703591302 / 9

Email: info@uwezodtm.com
Website: www.uwezodtm.com

Physical Address: Rehani House, 11th floor, Koinange Street

Date Licensed: 08 November 2010 1

Branches: 2

#### 8. Century Microfinance Bank Ltd

Postal Address: P. O. Box 38319 – 00623, Nairobi

Telephone: +254-20-2664282, 6768326, 0722168721, 0756305132

Email: info@century.co.ke

Physical Address: KK Plaza 1st Floor, New Pumwani Road, Gikomba

Date Licensed: 17th September 2012 2

Branches: 1

#### 9. Sumac Microfinance Bank Ltd

Postal Address: P. O. Box 11687-00100, Nairobi

Telephone: 020-2212587, 2210440, 2249047, 0738637245, 0725223499

Fax: (254) 2210430

Email: info@sumacdtm.co.ke

Website: www.sumacdtm.co.ke

Physical Address: Consolidated Bank House 2nd Floor, Koinange Street

Date Licensed: 29th October 2012 3

Branches: 3

#### 10.U&I Microfinance Bank Ltd

Postal Address: P.O. Box 15825 – 00100, Nairobi

Telephone: (254) 020 2367288, 0713 112 791

Fax: (254) 2210430

Email: info@uni-microfinance.co.ke

Website: http://uni-microfinance.co.ke/uni-microfinance/

Physical Address: Asili Complex Building 1st Floor, River Road

Date Licensed: 8th April 2013 4

Branches: 2

### 11. Daraja Microfinance Bank Ltd

Postal Address: P.O. Box 100854 – 00101, Jamia, Nairobi

Telephone: 020-3879995 / 0733 988888/0707 444888 / 0718 444888

Email: daraja@darajabank.co.ke Website: www.darajabank.co.ke

Physical Address: Karandini Road, off Naivasha Road

Date Licensed: 12th January 2015 5

Branches: 1

#### 12. Caritas Microfinance Bank Ltd

Postal Address: P.O. Box 15352 - 00100, Nairobi, Kenya

Telephone: 020-5151500

Email: info@caritas-mfb.co.ke Website: www.caritas-mfb.co.ke

Physical Address: Cardinal Maurice Otunga Plaza, Kaunda Street

Date Licensed:2nd June 2015 6

Branches: 1

# Quarterly Report (CBK, 2015)