

**THE EFFECT OF ELECTRONIC BANKING ON THE FINANCIAL
PERFORMANCE OF COMMERCIAL BANKS IN KENYA**

BY:

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D61/70856/2014

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

2015

DECLARATION

This research project is my original work and has not been submitted for the purpose of a degree course in any university.

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

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ACKNOWLEDGEMENT

I wish to express my sincere gratitude's and warmest appreciation to the following people, who, in any way have contributed and inspired me to the overall success of the undertaking. First I thank the Almighty God for granting me the strength and privilege to see this far of my academic life. I would not have made it were it not for His grace.

Secondly, I want to extend my sincere gratitude to my supervisor Mrs. Nyamute for her guidance, mentorship and support in the duration of the research.

I am also greatly indebted to my family who have always been very understanding and supportive both financially and emotionally and through their encouragement and prayers that have brought me this far.

Lastly, thanks to my fellow MBA students Joy, Kevin, Daniel, Patrick, Trezoh, and Sophie, who encouraged me throughout the research period.

Thank you all and may God bless you abundantly for without your support this project would not have come to a relevant and meaningful completion.

DEDICATION

This research project is dedicated to my family for their constant support and encouragement throughout my studies. Their selfless love and support has given me the motivation and inspiration to further my studies.

ABSTRACT

The Banking industry has been in a process of significant transformation. Innovation in information technology has been the major force behind this transformation. It is through this force that the study aimed to investigate the relationship between electronic banking and the financial performance of commercial banks in Kenya. The study specifically established whether there is a relationship between the dependent variable (Financial Performance) which was measured by banks return on assets and the independent variable (Electronic Banking Technology) which was measured by the number of ATM machine installed by the commercial banks, the number of point of sale outlets, and the number of credit and debit cards issued by the banks to customers as proxy for e-banking.

The study used secondary data between the year 2010 and 2014. The data was collected from Central Bank of Kenya, and the Kenya Financial Sector Stability Reports. This study targeted 43 commercial banks in Kenya and both descriptive and inferential statistics were used in analyzing the data. In this case, correlation and regression statistics were used to analyze the data with help of SPSS version 17.

In general the study revealed that e-banking has strong and significance marginal effects on returns on asset in the Kenyan banking industry. The relationship a 5% level of significance indicate that electronic banking is significant in explaining profitability of commercial banks in Kenya with a significance of 0.207. From the R correlation, 70.1% changes in financial performance of commercial banks is accounted to changes in electronic banking. Thus, there exists positive relationship between e-banking and bank performance. In general conclusion the electronic banking has made banking transaction to be easier by bringing services closer to its customers hence improving banking industry performance. The study recommends that the various players in the banking industry should adopt electronic banking services as this will enable them to have a wide coverage, flexibility, and greater accessibility compared to conventional banking.

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ABBREVIATIONS

ANOVA	Analysis of Variances
ATM	Automated Teller Machine
CAR	Capital Adequacy Ratio
CBA	Commercial Bank of Africa
CBK	Central Bank of Kenya
CDS	Credit / Debit Cards
EB	Electronic Banking
EBANKING	Electronic Banking
EMV	Euro pay, MasterCard and Visa
EU	European Union
GDP	Gross Domestic Product
ICT	Information and Communication Technology
KBA	Kenya Bankers Association
M-BANKING	Money Banking
MPMT	Mobile Phone Money Transfer
PBC	Perceived Behavior Control
PDA	Personal Digital Assistant
PEOU	Perceive Ease of Use
POS	Point of Sale
PU	Perceived Usefulness
ROA	Return on Assets

ROE	Return on Equity
S2B	Straight to Bank
SN	Subjective Norm
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
US	United States

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Information and communication technologies (ICT) have changed the way of conducting business transactions and meeting the growing demands of customers for most organizations. The changes of ICT in the banking industry have been widely witnessed by the development of Electronic Banking services, which have now been embraced by banks in developed and some developing parts of the world like Kenya to be part of their operations. The concept and scope of e-banking is however still evolving. Electronic Banking however, has been defined by some scholars as: the deployment of banking services and products over electronic and communication networks directly to customers (Singh and Malhotra, 2004). It is also an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution (Fincen, 2000).

Some of the activities that can be carried out through electronic banking are: have your salary deposited directly into your bank account by Electronic Funds Transfer, withdraw money from an Automated Teller Machine with a personal identification number, your mortgage payment, paying your utility bills, buying airtime for your phone etc. It is therefore described as the use of electronic means to deliver banking services, mainly through the Internet. Like many other developing countries, e-banking in Kenya is at its developing stages. Not many banks have embraced e-banking but majority have at least one or two technology based delivery channels. The non-adoption of e-banking by banks

has been attributed to impaired non-availability of infrastructure to support e-banking (Richard Nyangosi, 2008).

1.1.1 Electronic Banking

E-banking is viewed as the process by which a customer carries out banking transactions electronically without going to a brick-and-mortar institution ((Fincen, 2000). Electronic banking has been developed into two major platforms namely the Mobile Banking (m-banking) and the Internet Banking. Mobile Banking is the platform that individuals can use to access their bank accounts directly from their mobile phones or Personal Digital Assistant (PDA). Individuals can use mobile banking services to buy phone airtime, withdraw cash, deposits, payments, transfers or even access customized information. “..Mobile banking is increasingly becoming a “need to have” than a “nice to have” service (Mwangi, 2015)”. Internet banking on the other hand is a service that allows customers to access their bank accounts online anywhere anytime through an internet connection access. This means that you can access banking services from your house, at the airport, in the hotel, at school, in your office, and anywhere else provided you have access to the internet and a computer.

In Kenya, we have Mshwari which is offered by Commercial Bank of Africa (CBA) in conjunction with Safaricom. Mshwari has become a new banking product for M-PESA customers that allow one to save and borrow money through the phone while earning interest on money saved. Mshwari has therefore become a paperless banking service that will enable a customer to operate an Mshwari bank account through a mobile phone

without having to visit any bank to fill out bank account opening forms. Customers with Mshwari accounts can access a micro credit product of a minimum of Ksh. 200 (CBK, 2013). There is also Straight to Bank (S2B) offered by Standard Chartered Bank of Kenya which allows one-stop online banking and cash management solution. With S2B, customers can use the cash management system to check their balances, payment of taxes, payment of utilities etc.

1.1.2 Financial Performance

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. Organizations require a stable and growing financial performance for wealth maximization of shareholders, survival and growth. There are usually four major financial ratios that are used to measure the financial performance of a company. They are profitability ratios, liquidity ratios, solvency ratios, and efficiency ratios (Julie et al., 2010). According to Bryn et al. (2010), solvency ratios indicate financial stability of a company because they measure a company's debt relative to its assets and equity. A company with too much debt may not have the flexibility to manage its cash flow if business conditions deteriorate. Profitability ratios indicate management's ability to convert sales into profits and cash flow. Liquidity ratios measure the ability of a company to meet its short term financial obligations i.e. paying short terms loans when they fall due. Lastly, efficiency ratios indicate how well a company is using its business assets.

According to Devinaga Rahiah (2010), for one to realize how well a bank is performing it is much more useful to consider return on assets and return on equity. According to Richard Loth (1999), Return on Assets (ROA) ratio illustrates how well management is employing the company's total assets to make a profit. The higher the return, the more efficient management is in utilizing its asset base. It is calculated by comparing net income to average total assets, and is expressed as a percentage. As a rule of thumb, investment professionals like to see a company's ROA come in at no less than 5%. However, there is an exemption that applies to banks, which strive to record an ROA of 1.5% or above (Richard, 1999). On the other hand, Return on Equity (ROE) ratio indicates how profitable a company is by comparing its net income to its average shareholder's equity. It measures how much the shareholders earned for their investment in the company. The higher the percentage ratio, the more efficient management is in utilizing its equity base and the better it is to investors.

1.1.3 Effect of Electronic Banking on Banks Financial Performance

Some of the factors that have made banks and customers to take advantage of e-banking are speed, convenience, and inexpensive (Okiro, 2013). It is therefore crucial that e-banking innovations be made through sound analysis of risks and cost associated to avoid harm on banks performance. This is because bank financial performance is directly dependent on efficiency and effectiveness of e-banking and on the other hand tight controls in standards to prevent losses associated with e-banking. In order not to impair on their prosperity, there is need for financial institutions to strike a balance between tight

controls and standards in efficiency of e-banking. This is only possible if the effects of e-banking on financial institutions and its customers are well analyzed and understood.

E-banking is an improvement over traditional banking system because it has reduced the cost of transaction processing, improved the payment efficiency, financial services and the banker-customer relationship. The relationship between e-banking and service quality can be studied with the level of satisfaction. The customer satisfaction is the function of customer expectation level and service quality level provided by the organization. E-banking plays a pivotal role in giving satisfaction to the customers because e-banking fills the gap between the expected and perceived service quality. So in order to fill this gap, banks should find ways of making electronic services more accessible and by allowing the customer to verify the accuracy of the e-banking transactions. On the whole we can say that e-banking has become pre-imminent method of carrying the banking transaction and increase the customer satisfaction (Fincen, 2000).

1.1.4 Commercial Banks in Kenya

Kenya currently has 44 banks: 31 of which are locally owned and 13 are foreign owned (CBK Annual Report, 2013). The major indicator of e-banking services in Kenya is the Automated Teller Machines (ATM). The number of ATMs increased by 4.5 percent, from 2,381 in 2012 to 2,487 in December 2013 representing an increase of 106 ATMs. The increase in the use of technology by banks has been driven mainly by stiff competition leading them to adopt cost effective channels in offering financial services to ensure efficiency and maintain market share. The number of Point of Sale (POS)

terminals also grew by 14.1 percent from 18,478 terminals in 2012 to 21,089 terminals in 2013. Increased usage of payment cards has ushered in enhanced strengthening of risk mitigation measures by Kenya Bankers Association in collaboration with Central Bank of Kenya. The two continue to monitor and encourage full adoption of Euro pay, MasterCard and Visa (EMV) global security standards in the payment cards by March 2014 (Kenya Financial Sector Stability Report, 2013).

Mobile Phone Money Transfer (MPMT) services agents grew by 47.1 percent in 2013 to reach 113,130 from 76,912 agents in 2012. Mobile Money Users grew by 19.9 percent to end 2013 at 25.3 million from 21.1 million customers in 2012. The volume and value of Mobile Phone Money Transfers maintained upward trend, reaching 733 million transactions valued Ksh 1,901.6 million in 2013 from 575 million transactions worth Ksh. 1,537.5 million in 2012 (Kenya Financial Sector Stability Report, 2013). According to CBK Annual Reports (2013), the banking sector in Kenya registered an improved performance in 2013 notwithstanding the marginal economic growth. The sector registered a 15.9 percent growth in total assets from Ksh. 2.33 trillion in December 2012 to Ksh. 2.70 trillion in December 2013. Equally, the customer deposits grew by 13.5 percent from Ksh. 1.71 trillion in December 2012 to Ksh. 1.94 trillion in December 2013.

1.2 Research Problem

Due to the rapid changes in technology, businesses and individuals need to be up to date with the e-banking technology changes. This will help to reduce huge costs incurred in operation due to technology obsolescence. Banks and customers need to take advantage

speed, convenience, and cheap cost of e-banking. Businesses need to adapt to e-banking services to improve the efficiency and effectiveness of their operation. Commercial banks in the Kenyan banking sector have been using the traditional methods of banking where customers needed to be physically present in the banking mall to carry out their banking transactions. The study therefore sought to determine the effect that e-banking has on the financial performance of commercial banks in Kenya (King'oo, 2011).

Despite the potential benefits of ICT and e-commerce, there is debate about whether and how their adoption improves bank performance. Several attempts have been made to investigate the impact of electronic banking on bank performance. A research study carried out by Kamesam (2001), found out that technology advancement resulted in increasing the level of profitability and productivity of banks. He established that those banks with high profit growth are more likely to be using greater numbers of advanced ICTs. He concluded that e-banking leads to higher profits though in long-term but not in short-term due to high ICT investment cost and also in order to reduce crimes, security audit should be done which will be helpful in improving customer service, increase systematic efficiency and thus increased profitability.

There has also been mixed conclusions on the effect of e-banking on the financial performance of commercial banks in Kenya. According to research studies by Okiro (2013) & Furst et al. (2000) found that banks in all size categories offering internet banking services were generally more profitable and tended to rely less heavily on traditional banking activities in comparison to non-internet banks. An exception to the superior performance of internet banks was the de novo (new start-ups) internet banks,

which were less profitable and less efficient than non-internet de novos. Internet banking was too small a factor to have affected banks' profitability (Furst et al., 2000). Contrary to their study, Sullivan (2000) found that click and mortar banks in the 10th Federal Reserve District incurred somewhat higher operating expenses but offset these expenses with somewhat higher fee income. On average, this study found no systematic evidence that banks were either helped or harmed by offering the internet delivery channel.

It is the center of such mixed conclusions of the studies that creates and necessitates the need to carry out a study from a Kenyan context to establish the effect of e-banking on commercial banks financial performance. This study therefore addressed the following research question: what is the effect of e-banking on financial performance of commercial banks in Kenya?

1.3 Research Objective

The objective of this study is to determine the effect of e-banking on financial performance of commercial banks in Kenya.

1.4 Value of the Study

The research findings will be of benefit to:

The regulators - to gain a deeper understanding of the e-banking technology under their policy. It would be useful for them to use this knowledge gained to tailor regulations to safeguard the interests of consumers while still giving enough room for the market players to profitably carry out their operations.

E-banking operators – to improve and expand their services in a way that facilitates economic empowerment to all the parties involved. They will gain a deeper understanding of the services that consumers prefer to operate under. The information will thus be used to tailor the provider's services to suit the customers' needs and expectations and hence gaining a competitive advantage.

Consumers and business owners - to educate themselves on the many avenues and platforms that e-banking affords to them. They will thus understand the needs of their customer's with regards to the technology. Business owners may choose to use e-banking methods in their trade as a result of understanding their customer base.

Academicians and researchers - to further study the concept of e-banking. They could carry out research on various other aspects that are not covered within the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the existing literature on the effect of electronic banking on profitability of commercial banks. In specific, the chapter will review the theoretical review where various theories on e-banking are reviewed, empirical review where empirical studies done on effects of e-banking on banks profitability are reviewed, the concept of e-banking, and in conclusion the summary of literature review which summarizes the chapter.

2.2 Theoretical Review

Several and theories are offered to investigate and illustrate the attitude that consumers have on the adoption and use of e-banking services. User acceptance or adoption of technology is defined as “the act of receiving information technology use willingly” (Saga et al. 1994). Some of the theories that have been developed to explain how e-banking technology is adopted include: theory of reasoned action (Fishbein, *et al.* 1975), theory of planned behavior (Ajzen, 1985), and technology acceptance model (Davis et al., 1986).

2.2.1 Technology Acceptance Model

Technology acceptance model (TAM) theory was proposed by Davis *et al.* (1989). TAM focuses on explaining the attitude behind the intention to use a specific technology or service. TAM model hypothesizes that system use is directly determined by behavioral

intention to use, which is in turn influenced by users' attitudes toward using the system and the perceived usefulness of the system. Attitudes and perceived usefulness are also affected by perceived ease of use. Perceived usefulness (PU) is defined as the extent to which a person believes that using a system will increase his or her job performance. Perceived ease of use (PEOU) refers to the degree to which a person believes that using the system will be free of effort (Davis et al., 1989). The behavioral intention is a measure of the strength of one's willingness to exert effort while performing certain behaviors. Attitude explains a person's favorable or unfavorable assessment regarding the behavior in question.

2.2.2 Theory of Reasoned Action

Theory of reasoned action (TRA) was proposed by Fishbein, et al. (1975). It suggests that an individual's intent to adopt an innovation is determined by three things: their attitude towards the specific behavior, their subjective norms, and their perceived behavioral control. Behavioral intention measures a person's relative strength of intention to perform a behavior. The attitude toward performing the behavior is an individual's positive or negative belief about the performing the specific behavior. These beliefs are created from experiences, outside information, or from within self. Only a few of these beliefs, however, actually influence attitude. Knowing these beliefs can be as important as knowing the person's attitudes. Subjective norm is seen as a combination of perceived expectations from relevant individuals or groups along with intentions to comply with these expectations. In other words, it is the person's perception that most people who are

important to him/her think they should not perform the behavior (Fishbein & Ajzen, 1975).

2.2.3 Theory of Planned Behavior

The theory of planned behavior (TPB) was developed by Ajzen in 1988. The theory started as the theory of reasoned action to predict an individual's intention to engage in a behavior at a specific time and place. TPB suggest that a central factor in human behavior is behavioral intention, which is affected by attitude toward behavior, subjective norm, and perceived behavioral control (Ajzen, 1985). Subjective norm (SN) expresses the perceived organizational or social pressure of a person who intends to perform the behavior in question. In other words, the subjective norm is relative to normative beliefs about the expectations of other people. Perceived behavioral control (PBC) reflects a person's perception of the ease or difficulty of implementing the behavior in question. It concerns beliefs about the presence of control factors that may facilitate or hinder their performing the behavior.

2.2.4 Diffusions of Innovation Theory

According to Robinson (2009), diffusion of innovations seek to explain how innovations are taken up in a population. Diffusion of innovation suggests five qualities that influence the adoption of any given technology namely: relative advantage, compatibility with existing values and practices, simplicity and ease of use, trialability, and observable results. Relative advantage is the degree to which an innovation is perceived better than the idea it supersedes by a particular group of users measured in terms that matter to

those users, like economic advantage, social prestige, convenience, or satisfaction. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption is likely to be. There are no absolute rules for what constitutes “relative advantage”. It depends on the particular perceptions and needs of the user group (Robinson, 2009).

Compatibility with existing values and practices is the degree to which an innovation is perceived as being consistent with the values, past experiences, and needs of potential adopters. An idea that is incompatible with individual’s values, norms or practices will not be adopted as rapidly as an innovation that is compatible. Simplicity and ease of use - is the degree to which an innovation is perceived as difficult to understand and use. New innovations that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings. Trialability is the degree to which an innovation can be experimented with on a limited basis. An innovation that is trialable represents less risk to the individual who is considering it. Observable results refers to how easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. Visible results lower uncertainty and also stimulate peer discussion of the innovation (Robinson, 2012).

2.3 The Determinants of Bank Performance

The determinants of bank performances can be classified into bank specific (internal) and macroeconomic (external) factors (Al-Tamimi, 2010). Internal factors are individual bank characteristics which affect the banks performance. These factors are basically influenced

by internal decisions of management and the board. The external factors are sector-wide or country-wide factors which are beyond the control of the company and affect the profitability of banks. The overall financial performance of banks in Kenya in the last two decades has been improving. However, this doesn't mean that all banks are profitable, there are banks declaring losses (Oloo, 2010).

2.3.1 Capital adequacy

Capital is one of the bank specific factors that influence the level of bank profitability. Capital is the amount of own fund available to support the bank's business and act as a buffer in case of adverse situation (Athanasoglou et al. 2005). Banks capital creates liquidity for the bank due to the fact that deposits are most fragile and prone to bank runs. According to Dang (2011), the adequacy of capital is judged on the basis of capital adequacy ratio (CAR). CAR shows the internal strength of the bank to withstand losses during crisis. Capital adequacy ratio is directly proportional to the resilience of the bank to crisis situations. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures or areas (Sangmi and Nazir, 2010).

2.3.2 Asset Quality

The bank's asset quality is another bank specific variable that affects the profitability of a bank. The bank asset includes among others current asset, credit portfolio, fixed asset, and other investments. More often than not the loan of a bank is the major asset that generates the major share of the commercial banks income. The quality of loan portfolio determines the profitability of banks. The loan portfolio quality therefore has a direct

bearing on bank profitability (Dang, 2011). It is the major concern of all commercial banks to keep the amount of nonperforming loans to low level. This is so because high nonperforming loan affects the profitability of the bank. Thus, low nonperforming loans to total loans shows that the good health of the portfolio a bank. The lower the ratio the better the bank financial performance (Sangmi and Nazir, 2010).

2.3.3 Management Efficiency

Management Efficiency is represented by different financial ratios like total asset growth, loan growth rate and earnings growth rate. The performance of management is often expressed qualitatively through subjective evaluation of management systems, organizational discipline, control systems, quality of staff, and others. The capability of the management to deploy its resources efficiently for income maximization is measured by financial ratios. One of this ratios used to measure management quality is operating profit to income ratio (Sangmi and Nazir, 2010). The higher the operating profits to total income (revenue) the more the efficient management is in terms of operational efficiency and income generation.

2.3.4 Earnings Ability

A consistent profit not only builds the public confidence in the bank but absorbs loan losses and provides sufficient provisions. It is also necessary for a balanced financial structure that provides shareholder reward. Thus consistently healthy earnings are essential to the sustainability of banking institutions. Profitability ratios will measure the ability of a company to generate profits from its assets (Dang, 2011)

2.3.5 Liquidity Management

Liquidity refers to the ability of the bank to fulfill its obligations, mainly of depositors. According to Dang (2011) adequate level of liquidity is positively related with bank profitability. The most common financial ratios that reflect the liquidity position of a bank are customer deposit to total asset and total loan to customer deposits.

2.3.6 Macro-economic Factors

The macro-economic policy stability, Gross Domestic Product, Inflation, Interest Rate and Political instability are the macroeconomic variables that affect the performances of banks. For instance, the trend of GDP affects the demand for banks asset. During the declining GDP growth the demand for credit falls which in turn negatively affect the profitability of banks. On the contrary, in a growing economy as expressed by positive GDP growth, the demand for credit is high due to the nature of business cycle. During boom the demand for credit is high compared to recession (Sangmi and Nazir, 2010).

2.4 Empirical Review

2.4.1 International Research studies

DeYoung et al. (2006) observed the change in financial performance of internet community banks in U.S. during 1999-2001. The results found that internet adoption improved community banks' profitability, particularly through increased revenues from deposit service charges. Internet adoption was also associated with movements of deposits from checking accounts to money market deposit accounts, increased use of brokered deposits and higher average wage rates for bank employees. It found little

evidence of changes in loan portfolio mix. The findings suggested that internet adoption was associated with an economically and statistically significant improvement in bank profitability.

Ceylan et al., (2008) have done a research entitled “The effect of e-banking on banks’ profitability in Turkey”. In this study, they have used bank specific variables and macroeconomic variables to evaluate the effect of e-banking on financial performance indicators of 14 commercial and saving banks in Turkey in the period between the years 1996 and 2005. Results showed that investment in e-banking is a gradual process and e-banking activities has had a positive effect on performance of Turkey banking system.

DeYoung (2005) analyzed systematically the financial performance of pure-play internet banks in U.S. The study found relatively lower profits at the internet-only institutions than the branching banks, caused in part by high labour costs, low fee based revenues and difficulty in generating deposit funding. However, consistent with the standard Internet banking model, the results indicated that internet-only banks tended to grow faster than traditional branching banks. Internet-only banks have access to deeper scale economies than branching banks and because of this; they are likely to become more financially competitive over time as they grow larger. Delgado et al. (2006) found similar results for internet-only banks in the EU. Nevertheless, the magnitude of technology based scale economies found in Delgado et al. (2006) was substantially larger than that estimated by DeYoung studies.

Furst et al. (2000) found that banks in all size categories offering internet banking services were generally more profitable and tended to rely less heavily on traditional banking activities in comparison to non-internet banks. An exception to the superior performance of internet banks was the de novo (new start-ups) internet banks, which were less profitable and less efficient than non-internet de novos. Internet banking was too small a factor to have affected banks' profitability (Furst et al., 2000).

Sullivan (2000) found that click and mortar banks in the 10th Federal Reserve District incurred somewhat higher operating expenses but offset these expenses with somewhat higher fee income. On average, this study found no systematic evidence that banks were either helped or harmed by offering the internet delivery channel. Similar to the results of Furst et al., this study also found that de novo click and mortar banks performed significantly worse than de novo brick and mortar banks.

Using information drawn from banks in Italy, Hasan et al. (2002) found that the internet banking institutions were performing significantly better than the non-internet groups. Additionally, the risk variables associated with the internet group continued to be lower relative to the non-internet group. The asset-liability variables revealed that on average the banks in this internet group were larger and had significantly higher trading and investment activities and less dependent on retail deposits (both demand and saving deposits) relative to the non-internet group. The only category where the internet group showed a lower performance was the noninterest expense category. It found a significant and positive link between offering of internet banking activities and banks' profitability

and a negative but marginally significant association between the adoption of Internet banking and bank risk levels particularly due to increased diversification.

Kamesam (2001) studied the changes that took place in the Indian banking industry which emphasized on technology advancement and profitability in banks. The study found out that technology advancement resulted in increasing the level of profitability and productivity of banks. He concluded that in order to reduce crimes, security audit should be done which will be helpful in improving customer service, increase systematic efficiency and thus increased productivity and profitability.

Siam (2006) evaluated the effects of electronic banking on the profitability of Jordanian banks. The results of the study revealed that electronic banking services had a negative impact on the profitability of banks in the short run because of increased capital costs involved in technical and electronic infrastructure, cost of training to employees and also the cost involved in creation of environment where the banks can operate smoothly. However, these services had a positive impact in the long run on the profitability of banks. The researcher recommended that banks need to carry out awareness and promotion campaigns to educate clients and aware them of feasibility through reduced time, cost, effort and also to hold training courses for employees to understand the e-banking business strategies.

2.4.2 Local Research Studies

According to Njogu (2014), his study found out that there is a very strong relationship between financial performance of commercial banks in Kenya and the electronic banking

technology adoption. This is because e-banking has helped the commercial banks to lower their costs of banking, through technology which has created greater opportunities to the banks to offer great flexibility to the customers. He also found out that the size of the bank has a positive influence in the financial performance of commercial banks in Kenya.

According to Aduda et al. (2012), they carried out a research entitled “the relationship between e-banking and financial performance among commercial banks in Kenya”. The study established whether there is a relationship between dependent variable as measured by ROA, and the independent variable as measured by investments in e-banking, number of ATMs, and the number of debit cards issued to customers as proxy of e-banking. The study revealed that e-banking has a strong and significance marginal effects on ROA in the Kenyan industry. Thus there exists positive relationship between e-banking and bank performance.

According to Maiyo (2013), he conducted a study on the effect of electronic banking on financial performance of commercial banks in Kenya. The study revealed that fees and commission from debit cards, credit cards and mobile banking has a significant effect on returns on asset whereas fees and commission from internet banking as well as the amount of money that commercial banks invest in electronic banking to install, train staff and maintain the platforms has no or minimal effect on return on assets. The adoption of e-banking banking has enhanced performance of commercial banks due to increased efficiency, effectiveness and productivity.

According to Okiro et al. (2013), they conducted a study on the impact of mobile and internet banking on performance of financial institutions in Kenya. They found out that adoption of mobile and internet banking has been slow due to impaired unavailability of infrastructure and lack of supportive legislation for mobile and internet banking. However, the adoption has enhanced performance of the banking industry due to increased efficiency, effectiveness and productivity.

2.5 Summary of Literature Review

Electronic banking technology has made some banking tasks more efficient and cheaper, but the technological investments are taking a larger share of bank's resources. These resources are mostly used in the installation of the systems and training information technologists on the same to ensure efficiency in their operation. From the previous studies, it is also true that, as the intensity and experience in the usage of internet increases, the financial performance of banks using e-banking system is likely to improve.

E-banking in Kenya is mainly used as a compliment of other service delivery channels in order to create convenience to the customers. It is also used as a competitiveness tool in order to attract and retain mainly the corporate clients. From the previous studies, there is also a mixed empirical evidence about the impact of e-banking on bank's financial performance. In view of the overall findings, the research question for this study will therefore be whether e-banking has an effect on the banks financial performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives a brief description of the methodology that will be used in conducting the research study. The chapter is organized into the following sections; section 3.2 explains the research design used, section 3.3 shows the population and sample design of the study, section 3.4 shows the data collection instruments used, and lastly section 3.5 will explain the data analysis techniques and models used.

3.2 Research Design

The research design refers to the overall strategy that you choose to integrate the different components of the study in a logical way, thereby ensuring you will effectively address the research problem (De Vaus, 2001). The research adopted a descriptive method in order to describe the data and characteristics about the population. Descriptive research tries to explore the cause of a particular event or situations. It also wants to present facts concerning the nature and status of a situation as it exists at that time of the studying. Such a method tries to describe present conditions based on the impressions or reactions of the participants of the research. It seeks to answer questions such as who, what, where, when, and how. Descriptive approach is quicker and more practical in terms of financing and therefore allows space for flexibility when more important new issues, probabilities and questions come up during the duration of the study.

3.3 Population

The population for this study consisted all commercial banks in Kenya registered with CBK. There are a total of 43 commercial banks in Kenya which forms the target population for this study. They comprise 6 big banks, 16 medium banks and 21 small banks; Charterhouse bank excluded (CBK Annual Report, 2013). The study used the entire population of 43 banks as a census survey to carry out the research and therefore there was no sampling.

3.4 Data Collection

The type of data collected in this study was secondary data that was obtained from the Central Bank of Kenya and the after tax audited financial statements of commercial banks in Kenya using data collection forms for the period from 2010 to 2014.

The data collected on the financial performance of banks was the return on assets for the banks. This data is usually presented to the public after every financial year of the bank therefore it becomes easy to obtain it. For the electronic banking data collected, it included the number of credit and debit cards issued, the number of ATMs, and the number of Point of Sale outlets for the commercial banks that was obtained from the Central Bank of Kenya report that is issued every year quarterly.

3.5 Data Analysis

The data collected was cleaned, sorted and then put in order. Then, the data was entered into the computer, after which analysis was done. First, descriptive statistics such as

mean score, frequencies and percentages for each variable was calculated and tabulated using frequency distribution tables, or pie charts and/or bar charts.

Second, regression analysis was used to analyze the effect of electronic banking on bank financial performance. Regression analysis was conducted to investigate the relationship between electronic banking on bank performance. The analysis was done with the help of Statistical Package for the Social Sciences (SPSS) version 17 software. The regression model that was evaluated is represented as follows:

$$ROA_{jt} = \alpha_0 + \beta_3 ATM_{jt} + \beta_4 POS_{jt} + \beta_4 CDS_{jt}$$

Where:

ROA_{jt} = financial performance represented by natural log of return on assets for banks,

POS_{jt} = the natural log of number of point of sale for banks,

CDS_{jt} = the natural log of number of credit / debit cards issued by banks,

ATM_{jt} = the natural log of number of ATM systems installed by the banks,

Jt = banks j at time t ,

α_0 = Estimated value of Y when all the other variables are zero,

β_i = Correlated volatility of estimated value of Y .

The multivariate regression model was used to find the value of α_0 and β_i which explains the relationship between the independent variables and dependent variable. The reliability of the estimate of the individual beta will be tested by p-value in the ANOVA table.

In order to test the model significance, the study used ANOVA to test the model level of significance at 95% confidence level and 5% level of significance.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS, & DISCUSION

4.1 Introduction

This chapter addresses the data analysis and research findings on the effect of electronic banking on the financial performance of commercial banks in Kenya and includes research variables, descriptive statistics and regression analysis. The data was collected from secondary sources which were the commercial banks of Kenya financial statements and CBK annual reports for the years 2010 to 2014. The data was analyzed using Microsoft Excel 2013 and SPSS version 17.

4.2 variables

There were two variables in the study which included the independent variables and dependent variable.

Dependent Variable

The dependent variable is the financial performance represented by profitability (return on assets).

Independent Variable

The independent variables is the electronic banking which was measured by the number of debit/credit cards issued to customers by banks, the number of ATM's systems installed by the banks, and number of point of sale terminals.

4.3 Descriptive Analysis

4.1.1 Descriptive statistics

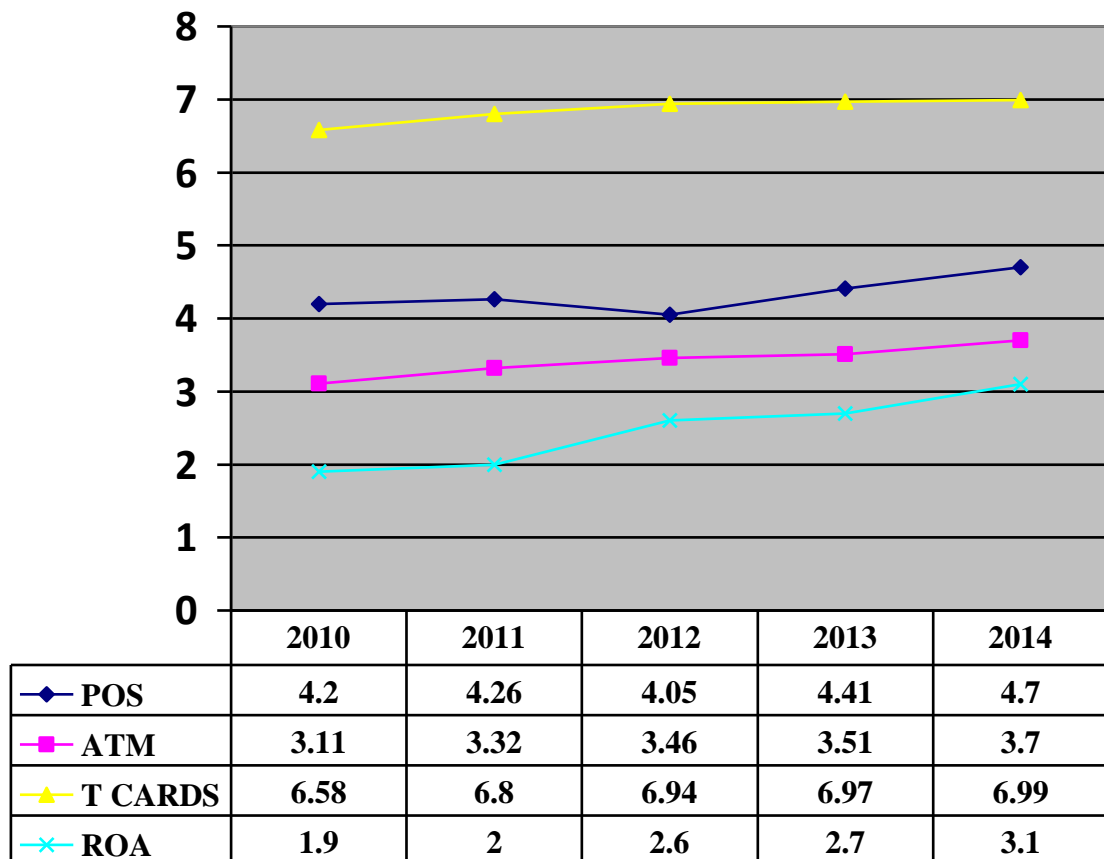
Year	POS	Profit after tax (in million shillings)	ATM Machines	Credit / Debit Cards
2010	15871	1612.05	1827	3809102
2011	18719	2495.30	2091	6304984
2012	16604	3754.75	2205	8670602
2013	18478	4970.20	2381	9201916
2014	21089	5321.11	2487	9701816
MEAN	18152.2	3630.68	2198.2	7537684
MAX	21089	5321.11	2487	9701816

Table 4.1.1 Descriptive Statistics

From table 4.1.1 bank performance was measured by profit after tax over the study period of five years from 2010 to 2014. From the research data, the net profit of commercial banks increased steadily from 2010 to 2014. This study used the number of ATMS installed by commercial banks, number of Credit and Debit cards issued, and the number of Point of sales installed. These generally indicate electronic banking innovation within the banking sector. The findings show that these have been increasing steadily since 2010

to 2014 and hence contributing to improvement of the commercial banks financial performance in the industry.

4.3.2 Trend of Variables



Graph 4.3.2

From the above graph 4.3.2, it shows the trend of the electronic banking adoption and how it had an impact on the dependent variable which was measured by return on assets. The number of all the independent variable increased steadily from 2010 to 2014 except between 2010 and 2011 when there was a slight decline in the number of point of sales.

This increase resulted into an improved performance for the banks as it was measured by the increase in return on assets in the years.

4.4 Regression Analysis

Table 4.1.2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.866 ^a	.750	.701	.153169

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable, from the findings in the above table the value of adjusted R squared was 0.701 an indication that there was variation of 70.1% on performance of commercial banks in Kenya due to changes in point of sales, automatic teller machine, credit and debit cards 95% confidence interval. This shows that 70.1 % changes in financial performance of commercial bank could be accounted to changes in point of sales, automatic teller machine, credit and debit cards installed by banks. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.750.

Table 4.1.3 ANOVA

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3.190	3	.063	2.713	.207 ^a
Residual	2.6007	1	.000		
Total	3.390	4			

a. Predictors: (Constant), C/D CARDS, POS, ATM

b. Dependent Variable: Profit After Tax

Table 4.1.3 shows the overall significance of the regression estimation model. The population parameters, had a significance level of 0.207% which shows that the data is ideal for making a conclusion on the population's parameters as the value of significance (p-value) is less than 5%. It indicates that the model is significant in explaining the relationship between profitability and electronic banking at 5% level of significance. Analysis of Variance shows that f-calculated is greater than f critical that is $2.713 > 0.207$. This implies that the regression equation was well specified and therefore the co-efficient of the regression shows that there is a strong relationship between bank performance and electronic banking. The analysis of variance of the predictors of the model has a significance of 0.207.

Table 4.1.4**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.881	.040		4.558	.014
POS	-1.071	-2.060	.256	-5.089	.042
ATM	1.001	3.090	1.127	2.042	.029
C/D	1.919	.706	.066	1.634	.350
CARDS					

a. Dependent Variable: Profit After Tax

From table 4.1.4, the regression model therefore becomes:

$$Y_i = 2.881 + -1.071 (\text{POS}) + 1.001(\text{ATM}) + 1.919(\text{C/D CARDS})$$

This therefore means that the profitability of commercial banks would be at 2.881 when the electronic banking components are held at a zero constant. ATM is positively related to profitability and therefore a unit increase of the number of ATMs would lead to an increase in profitability by a factor of 1.001. DC/CD is positively related to profitability and therefore a unit increase of DCs/CDs would lead to an increase in the profitability by a factor of 1.919 and this is significant at 5% level of significance. POS is also negatively related to profitability and therefore a unit increase of POSs would result in a decrease in

profitability by a factor of 1.071. However the result is not significant at 5% level of significance.

4.4 Interpretation of the Findings and Discussions

This study found out that adoption of electronic banking technologies boosts financial performance of the commercial banks. From the descriptive analysis of the variables, independent variables have been evidenced to increase in numbers across the years been studied. This is represented by the increase in the number of ATM's, number of credit and debit cards issued, and the number of point of sales for the banks. This has however contributed to a steady increase in the bank's financial performance across the five years of study.

From the study, the overall regression estimation of the model is significant at 5% level of significance. It indicates that the model is significant in explaining the relationship between profitability and bank performance at a 5% level of significance. The results indicate that electronic banking is significant in explaining profitability of commercial banks in Kenya with a significance of 0.207. Analysis of variance (ANOVA) also show that f-calculated is greater than f-critical ($2.713 > 0.207$). This implies that regression equation was well specified and therefore the co-efficient of the regression shows that there is a strong relationship between the variables.

From the findings on the R correlation the study found that there was a strong relationship between financial performance of 43 commercial bank and electronic banking as measured by the number of automatic teller machine, point of sale, credit and

debit cards issued by the banks. From the coefficient result the study revealed that there is a positive relationship between financial performance of commercial banks and the electronic banking. A 70.1 % changes in financial performance of commercial bank could be accounted to changes in point of sales, automatic teller machine, credit and debit cards installed by banks. These is a good reflection of the true position that bank performance can be explained by investments in electronic banking. The study thus reveals a statically significant relationship between financial performance of commercial banks and the adoption of electronic banking technology.

The introduction of electronic banking has revolutionized and redefined the means through which bank operations are carried out. Technology is now considered as the main contribution for the organizations' success and as their core competencies. Banks therefore need to invest more on providing customers with this new technology be it foreign or domestic banks.

The findings of the study concur with the findings of Kamesam, (2001), who found out that technology advancement resulted in increasing the level of profitability and productivity of banks in India. This technology also crated greater opportunities to service providers to offer great flexibility to the customers. To this end banks are fast developing branchless banking such as ATMs, Internet and Mobile banking among others. The findings also concurs with Maiyo, (2013), who found out that adoption of electronic banking has enhanced performance of commercial banks due to increased efficiency, effectiveness, and productivity.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary, conclusions, and recommendations for the research findings in line with the objectives of the study.

5.2 Summary

The study objective was to determine the effects of electronic banking on financial performance of commercial banks in Kenya. These data were collected from the Central Bank of Kenya. Regression analysis was done for the period to determine the effects of electronic banking on financial performance of commercial banks in Kenya. The study covered a period of 5 years from year 2010 to 2014. The findings on the coefficient of determination found that major changes in the financial performance of commercial banks in Kenya could be accounted to changes in automatic teller machine, point of sales, and the number of credit and debit cards issued by the banks at 95% confidence interval. In Kenya ATMs, Debit Cards and Credit Cards are capable of generating some income for commercial banks due to the convenience they offer to bank customers. Banks in Kenya have been marketing themselves by showcasing their ATM network across the country with an objective to attract more customers and eventually contribute to bank profits.

Ceylan et al., (2008) in a study in Turkey found that the increase in the adoption of ATMs, Debit cards and Credit cards had a positive impact on a bank's image and its

profitability. These Cards are also affordable to both the banks and the customers and they don't require a lot of maintenance costs both at acquisition and when in operation. This makes cards quite attractive as an instrument for conducting transactions for customers and the banks. This high usage of cards attracts commission income for the bank which adds to the bank profits. Results showed that adoption of the e-banking technology is a gradual process and its activities has had a positive effect on performance of Turkey banking system.

Many retail transactions in Kenya have moved to the mobile phone which is part of the electronic banking technology. Bank customers can move money from their bank accounts to their e-money accounts or from their e-money to their bank accounts. This improvement of the mobile money services has increased the pace and circulation of money in the country and has resulted to more profits for the banks through commission incomes. Okiro, (2013) in a study conducted in Kenya found that electronic funds transfer reduced costs, saved time, improved accuracy, improved reliability and quality of services and eventually led to improved profitability for the banks.

5.3 Conclusions

The result of the study indicated that bank performance (measured by return on assets) are explained by independent variable the e-banking which is measured by the number of credit and debits cards issued to customers, the number of ATM machine installed, and the number of point of sale outlets for the commercial banks. This indicates that electronic banking has a significance marginal effects on returns on asset in the Kenyan

banking industry. Thus, there exists positive relationship between e-banking and bank performance.

Based on the summary of the major findings the following conclusions are drawn: the adoption of electronic banking has enhanced Kenyan banking industry by making it more productive and effective; Electronic banking also has a strong positive relationship on the overall banking performance by making workers performance more effective and efficient; the adoption of electronic banking has enhanced the fortune of the Kenyan commercial banks. This is especially achieved through charges on the use of debit cards and ATM withdrawal charges.

The use of electronic banking has improved the bank customer relationship by rendering effective services throughout the day and night. From the study's literature, there was a positive anticipation of the relationship between electronic banking adoption and the financial performance of the banks. The results of this study is consistent with the literature of the study as it was found out that 70.1% changes in the bank's financial performance was as a result of adoption of electronic banking services in the form of ATMs, Point of Sales outlets, and the number of debit and credit cards issued.

In general conclusion the electronic banking service provides convenience and promptness to customers along with cost savings, and also the interest for banks to expand their market through electronic channels. This has made banking transaction to be easier by bringing services closer to its customers through adoption of electronic banking services hence improving banking industry financial performance.

5.4 Recommendations

From the finding there is need for various players in the banking sectors to adopt electronic banking service as this will enable them have a wide coverage, flexibility, and greater accessibility compared to conventional banking. Commercial banks therefore needs to heavily invest in technology as this will highly influence the financial performance of commercial banks. The Central Bank of Kenya which is the regulator of the banks also needs to keenly monitor the banks operations to ensure they are as par the set standards. The banks systems should be very secure to reduce chances of fraud occurring.

5.5 Limitations of the Study

The findings generated as a result of the study are not in themselves conclusive as the study centered on only three critical determinants of banks financial performance. The study only concentrated on the number of ATMs that a bank has installed, the number of Point of Sales outlets, and the number of credit and debit cards issued by the bank. The outcome was thus restricted to few factors affecting banks financial performance.

The study was also limited to a period of 5 years from year 2010 to 2014. A longer duration of the study would have captured periods of various economic significances such as booms and recessions. This may have probably given a longer time focus hence given a broader dimension to the problem in the industry.

The size of the bank has been held constant across the period. Some of the banks have been in the industry for decades while others are new entrants in the industry. The banks

size have a direct relationships to the market share it holds in the entire banking industry. As a result some banks adopted electronic banking decades ago while other banks are in their transition stages to the technology. The findings of the study should have considered the different levels of the banks in terms of their size.

The study used secondary data which can be general and vague and may not really help companies make decisions on current issues. The information and data may not be very accurate and the source of the data had to be checked properly since the data was obtained from the Central Bank of Kenya.

The study was majorly based on the commercial banks only. Due to the rapid growth in technology in the banking industry, the electronic banking system services cuts across several industry including telecommunication, financial markets, insurance companies. The study should have thus cut across all the different industries to measure the effect that electronic banking services has on the firm's financial performance.

5.6 Suggestion for Further Research

From the findings generated as a result of the study from the three determinants of financial performance, further research should be carried out to find out if other determinants that affects the financial performance of the commercial banks. Other determinants include; other products offered by the bank for example the different types of accounts, loans and advances, investments for example in government securities among others. This will enable the research to measure the extent to which electronic

banking affects the financial performance of the banks in relation to other banks services that the banks operates for income generation.

The banking industry is usually very sensitive leading to booms and recessions. The study was limited to a period of 5 years from year 2010 to 2014. A further research should be done with a longer duration of the study that would have captured periods of various economic significances such as the booms and recessions. This may probably give a longer time focus hence give a broader dimension to the problem in the industry.

In this study the size of the bank has been held constant across the period. However the case, Kenyan banking industry has banks that has been in existence for decades while others are just a few years old. In most of the banks, their time of existence is directly proportionate to their size. As a result some banks adopted electronic banking decades ago while other banks are in their transition stages to the technology thus incurring huge costs through the investment of the technology. Further studies should thus be carried out considering the banks size and the period of their existence. The study should be specific to the large banks, middle sized, and small sized banks to find the effect that size has on the financial performance of the banks.

Since study was majorly based on the commercial banks only, further studies should be carried out in other industries that have embraced the electronic banking technologies. This is due to the rapid growth in technology in the banking industry that cuts across several industry including telecommunication, financial markets, insurance companies. This will assist to measure the effect of e-banking of the financial performance of other

firms in those industries. Other industries include the financial market, insurance companies etc.

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APPENDIX I

LIST OF COMMERCIAL BANKS IN KENYA AS AT 31st DECEMBER, 2013

1. African Banking Corporation Ltd
2. Bank of Africa Kenya Ltd
3. Bank of Baroda Ltd
4. Bank of India
5. Barclays Bank of Kenya Ltd
6. CFC Stanbic Bank Ltd
7. Charterhouse Bank Ltd
8. Chase Bank Ltd
9. Citibank
10. Commercial Bank Ltd
11. Commercial Bank of Africa Ltd
12. Consolidated Bank of Kenya Ltd
13. Co-operative Bank of Kenya Ltd
14. Credit Bank Ltd
15. Development Bank of Kenya Ltd
16. Diamond Trust Bank Kenya Ltd
17. Dubai Bank Ltd
18. Ecobank Ltd
19. Equatorial Bank Ltd
20. Equity Bank Ltd

21. Family Bank Ltd
22. Fidelity Commercial Bank Ltd
23. Fina Bank Ltd
24. First Community Bank Ltd
25. Guardian Bank Ltd
26. Gulf African Bank Ltd
27. Habib A.G. Zurich
28. Habib Bank Ltd
29. Housing Finance Co. of Kenya Ltd
30. I & M Bank Ltd
31. Imperial Bank Ltd
32. Jamii Bora Bank Ltd
33. Kenya Commercial Bank Ltd
34. K-Rep Bank Ltd
35. Middle East Bank Ltd
36. National Bank of Kenya Ltd
37. NIC Bank Ltd
38. Oriental Commercial Bank Ltd
39. Paramount Universal Bank Ltd
40. Prime Bank Ltd
41. Standard Chartered Bank Ltd
42. Transnational Bank Ltd

43. UBA Bank Ltd

44. Victoria Commercial Bank Ltd

Source: Central Bank Supervision Annual Report, 2013

APPENDIX II

	Quarter	Point of Sale	ATM Machines	ATM Cards	Credit Cards	Debit Cards
Year						
2010	1	18582	1887	1090092	108345	3894580
	2	19608	1943	1252893	111383	4156187
	3	20309	2025	1339649	114204	4539792
	4	18179	2091	1348236	113192	6191792
2011	1	17259	2151	1352232	114582	6721936
	2	16714	2183	1439729	119287	7002176
	3	16209	2217	1357045	120063	7144094
	4	16604	2205	1438453	122212	8548390
2012	1	16395	2252	1567260	125061	7975167
	2	16630	2291	1640004	131397	8121460
	3	17702	2311	1472902	135221	8649282
	4	18478	2381	1499035	138011	9063905
2013	1	18350	2397	1549961	140850	9218609

	2	19204	2439	1625895	133137	9126946
	3	20046	2478	1671118	152041	9503862
	4	21089	2487	1708639	158612	9543204
2014	1	21868	2595	985649	167968	10853117
	2	17395	2618	906908	187765	11588007
	3	16143	2595	925598	203384	11850146
	4	17511	2613	746620	208352	12552312