

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

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DECLARATION

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

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DEDICATION

I dedicate this work to my wife and son. You were my rainbow when it got cloudy.

Thank you.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
ATM	Automated Teller Machine
CBK	Central Bank of Kenya
E-BANKING	Electronic Banking
EFT	Electronic Funds Transfer
ICT	Information and communication Technology
IT	Information Technology
KBA	Kenya Bankers Association
OLS	Ordinary Least Squares
PC	Personal Computer
PIN	Personal Identification Number
ROE	Return on Equity
ROA	Return on Assets
SMS	Short Message Service
SPSS	Statistical Package for Social Science
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TAM	Technology Acceptance Model
TAT	Technology Acceptance Theory
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UK	United Kingdom
US	United States
USA	United States of America

ABSTRACT

The banking industry has been tremendously influenced by technological advancements just like the other aspects of life. The emergence of e-banking has significantly redefined and transformed banks' operations. Technology is viewed as the major driving force in firms' performance success. All banks irrespective of whether local or foreign are investing heavily on emerging technologies that assure customer satisfaction, effective and efficient service delivery in e-banking. This is done in an effort to achieve reduction in operating costs, increase volumes of transactions processed and attraction of new clientele. The study aims at discerning effect of electronic banking on the financial performance of commercial banks in the Kenyan banking industry. The study relied on descriptive study. The study was centred on all the 42 commercial banks governed and licensed in Kenya. The study made use of secondary data for the period 2011 to 2015 obtained from reports and publications. Statistical package for the social sciences (SPSS) used to analyse the data's descriptive statistics. To determine the associations between the return on assets and the electronic banking variables (ATM value of transactions, mobile banking value of transactions and internet banking value of transactions), a multiple linear regression model was put to use. The study established that electronic banking has contributed positively to the financial performance of Kenya's commercial banks. The study also showed that mobile, internet banking and use of ATM cards positively and significantly influenced the financial performance of Kenya's commercial banks as measured by the return on assets. The study recommends that commercial banks in Kenya increase their efforts towards adoption of e-banking to automate their service delivery to customers and that the banking industry's policy makers and regulators consider electronic banking as a major input when crafting guidelines to regulate the industry.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Electronic banking is founded on the employment of innovative tools to provide various banking products to customers. Over the years technology has had a significant impact on how banks operate and formed a bedrock upon which banks individuate their products from competitors. The products are provided through electronic intermediaries such as automated teller machines, cellular devices and the internet. Banks regularly depend on modern technology for customer service to satisfy their banking needs (Kolodinsky, Hogarth & Hilgert, 2004).

Banks are mandated to provide electronic services to remain competitive. Electronic banking transactions are provided by Kenyan banks. E-banking services comprise of internet transactions, ATM, funds transfers, and access to customer service without bank employees assistance. ATM banking has arguably been the banking industry's biggest innovation of the past twenty years. With the success of ATMs, banks had the impetus to develop new products and new delivery channels. Such development occasioned mobile banking surpassing the usage of ATMs (CBK annual report, 2015). The suggested reason for this is ease of accessibility and convenience. Mobile networks are available on a larger scale than ATMs. The familiarity of most people with the technology has also increased the trust they have in the mobile phone as a tool for effecting financial transactions.

Mobile banking facilitates quite a number of financial services via the use of mobile gadgets such as smart phones, tablets, and the use of application software for provision of

financial transactions. The scope of offered services may include most services offered at local branches. All major mobile network providers in Kenya provide m-banking services through modes such as SMS messaging and mobile phone or web applications. 25.2 million accounts constitute the present market size for mobile money (CBK Annual Report, 2015). The mobile network companies have collaborated with commercial banks to provide m-banking facilities mainly targeted at those not operating traditional bank accounts.

Internet banking (e-banking) involves the execution of a wide range of banking related services over the web or network connected to the customer's bank (Steven, 2002). Online banking service is offered by virtually all banks today and enables customers to perform all routine transactions, such as money transfer, e-payment of bills, account balance inquiry and online loan applications. Customers gain access to their accounts at their convenience using a terminal connected to their banking institution. Online banking has significantly improved customer service delivery efficiency. The world over, the banking industry has emphasized on the importance of information systems for ensuring efficient customer services in step with technological advancements.

This study was inspired by the continued growth of technology within the banking industry and how E-banking offers convenient access, secure and round the clock banking options. In an information-driven business climate like that of the banking industry, those banks that have not embraced online banking face a serious competitive challenge. This research study emphasizes on determining the effect of e-banking on financial performance of Kenya's commercial banks.

1.1.1 Electronic Banking

Numerous attempts have been made to offer a comprehensive description of e-banking (Kricks, 2009; Furst, Lang, & Nolle, 2000; Auta, 2010; Basel Committee Report on Banking Supervision, 1998). Furst et al. (2000) noted that the application of a distant delivery conduit in performing banking services on a major platform is e-banking. Kricks (2009) posited that e-banking is the provision of banking services through computerized systems. Kricks (2009) postulates that e-banking is the developing tendency to provide superior service, real time right to use and achieving cost reduction in an effort to secure maximum effectual banking. E-banking has replaced the traditional banking models (Ovia, 2001; Gonzalez, 2008).

E-banking is also seen as a process by which bank transactions are provided electronically to customers without going to an institution housed in a building structure (Simpson, 2002). In this case, e-banking is defined from the state of a virtual banking signifying that with e-banking implementation physical locality in terms of delivery of banking services seems to be of little significance. In all the definitions of e-banking internet is perceived as a strategic channel for providing essential banking services at the same time efficient quality at reduced costs without physical boundary restrictions.

The origin of electronic banking services dates back to the mid-90's. The roll-out of the services has been incremental ever since because of the low operating costs associated with them. Initially e banking constituted ATM and over the telephone transactions. Internet is a new channel for transactions between banks and their customers and this channel has given rise to electronic funds transfer (EFT), POS banking and mobile banking. EFT is popularly used to move money across bank accounts, either within the

same bank or to a different bank. POS banking encompasses card transactions (credit and debit cards).

1.1.2 Financial Performance

Financial performance refers to any of the numerous subjective measures to appraise how a firm is using assets at its disposal to make profit. It refers to the status of a company's financial well-being over a definite time period. It serves as a key factor for contrasting companies in the same industry. Vital measures of financial performance include capital adequacy and ratios such as profitability, liquidity, solvency and efficiency ratios (Julie, Bryn & Irene, 2010). Specific to banks' financial performance, measures such as profitability ratios, capital adequacy, liquidity ratio and asset quality are used as vital indicators of performance.

Capital adequacy ratio is the ratio of a bank's capital vis a vis its risk exposure expressed as a percentage. Liquidity ratio analyses the capacity of a bank to settle its obligations as they mature. Profitability ratios evaluate a bank's capacity to create earnings as compared to its assets and equity (Julie, Bryn & Irene, 2010). Asset quality refers to the quality of the investment and loan portfolios. It points to the risk associated with the portfolios. A bank's financial statements are a key source of inputs for measuring performance.

1.1.3 Electronic Banking and Financial Performance

The banking industry has been tremendously influenced by technological advancements just like the other aspects of life. The emergence of e-banking has significantly redefined and transformed banks' operations (Kolodinsky, Hogarth & Hilgert, 2004). Technology is viewed as the major driving force in firms' performance success. All banks irrespective of whether local or foreign are investing heavily on emerging technologies that assure

customer satisfaction in e-banking. Technologies such as mobile banking, electronic funds transfer (EFT), PC banking, online bills payments, online statements, account to account transfer, ATMs and credit cards, and account to account transfer are the banks major services.

Agboola (2006) studied Nigeria's banking industry Information and Communication Technology's (ICT) application in Nigeria. The study's findings established that modern technology was the major driver of competition in the banking sector. In the study an upsurge in the deployment of various e-banking tools was highly evident. The study indicated that the utilization of modern ICT practices significantly improves the bank's reputation and eventually results to foster efficient and effective service delivery. Efficient and effective service delivery in the long run results in reduction in operating costs, attraction of new clientele and this has an impact on the general financial performance of a bank.

1.1.4 Commercial Banks in Kenya

The Central Bank of Kenya is solely responsible for regulating the operations of banks in Kenya, and as at December 2015 the composition was as follows: 44 banks (43 commercial banks and 1 mortgage finance companies), 12 microfinance banks, 8 foreign banks representation offices, 14 cash remittance providers, 86 foreign exchange bureaus and 3 credit reference bureaus (CBK Annual Report, 2015). The banks formed an umbrella body for lobbying referred to as the Kenya Bankers Association (KBA).

Bank branches have since risen to 1,443 branches as at 2014 from the previous 1,342 in 2013 indicating a substantial upsurge in access to banks' products and services. The ATMs in the banking sector also rose to 2,613 in December 2014 as compared to the

previous 2,487 in December 2013, an increase of 126 representing a reasonable rise of 5.1 percent. Key developments in the sector during the year included increased convergence of banking and mobile phone platforms as banks explored more convenient and cost effective channels of banking (CBK Bank Supervision Annual Report, 2014). In 2015 the payments through electronic funds transfer increased to Kshs 513 billion from the previous 471 billion realized in 2014, this was an increase in percentage of 8.92%. Mobile phone money transactions increased by 21.59% over the same period from 824.26 million transactions in 2014 to 1,002.25 million transactions in 2015 (CBK Annual Report, 2015). Mobile cash transfer rose in value to Kshs 2,575.44 billion in 2015 as opposed to the previous figure of Kshs 2,148.13 billion in 2014. This clearly shows an increase of 19.89 percent (CBK Annual Report, 2015).

1.2 Research Problem

Kenya's banking industry operates within the stipulated guidelines provided by the Central Bank of Kenya Act, the Kenya's Banking Act, the Kenya's Companies Act, and any statutory requirements provided by the regulator Central Bank of Kenya. Several industries growth and development have been accelerated by technological advancement. In order for a firm to remain competitive it has to adopt focused strategies such as: improving product differentiation, changing prices – raising or lowering prices to attain a temporary advantage, implementing innovation in the production process and in the actual product, improving features, formulating and implementing innovative methods in the distribution channels, and using appropriate distribution channels or vertical integration that is ideal to the industry. Okiro (2013) observed how positively the

standards of service delivery in the financial sector institutions have been improved by technological advancement.

Several recent studies have also explored in great detail the resultant impact of technology on the banking sector. Kariuki (2005) studied six aspects in electronic money banking, which indicated a clear positive function of ICT on the bank's profits and anticipated turnover, and bank's performance. The study observed that high profit banks mostly generate higher profits in long-term rather than short-term because of investment costs of ICT.

A causal study by Kingoo (2011) evidently revealed bank performance is enhanced by e-banking adoption. In the happening of this, a recommendation emphasized that banks must focus their needs to achieve their goals by using the appropriate technology as opposed to using ICTs in electronic banking because the competition have positively embraced it's use. They also recommended for Government participation to ensure reduction of costs of implementing e-commerce, banking sector regulation by the Central bank of Kenya to avoid it becoming a dumping ground for outdated technology as well as manpower development in ICT skills. Shuqair (2003) in his research study of Jordanian banks that have adopted the use of electronic banking, found out that high costs in banking sector are incurred in the acquisition of electronic infrastructure and the training of employees. Therefore electronic banking service in the short run will negatively impact on the bank's profitability. Yegon (2012) studied the effect on firm performance as affected by ICT investments at the Kenya Commercial Bank Group Limited. The study asserted that the relationship was deemed not quite strong.

Mixed evidence is clearly witnessed on e-banking effect on banks' performance. Some of the studies also have a limited focus on the subject, limiting the study to the impact of mobile and internet banking (Okiro, 2013) and impact of mobile banking (Mwange, 2013). This research therefore aimed to ascertain the effect of electronic banking on the financial performance of Kenya's commercial banks.

1.3 Research Objective

The objective of the study was to assess the effect of electronic banking on the financial performance of commercial banks in Kenya.

1.4 Value of the Study

The study will be beneficial to a diverse group. Foremost, it will assist the regulators to mould regulations in place to address the various aspects of bank operations through gaining a deeper understanding of the role of electronic banking.

Secondly, managers of commercial banks will obtain a wider and deeper insight into the effect of online banking on bank's financial performance as well as recommendations on areas they can improve on in electronic banking. This study will act as a management guiding tool, to depict the significance of electronic banking and therefore assuring more focus in service provision and channelling adequate resources in the improvement of electronic banking. The study will also encourage consumers in the industry to take advantage of the ever changing technology to advance their operations through improved efficiency and consequently maximize returns.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter evaluates the literature concerning e-banking and its effect on the banking industry by examining the views of different authors. It provides an overview of information system adoption through analysis of different proposed models such as the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), and Theory of Planned Behaviour (TPB). This chapter also looks at the impact the electronic banking has had on the operational and financial performance of the Kenyan banking industry.

2.2 Theoretical Review

Emerging information technology tremendously affects the growth and flexibility in the user friendliness of electronic banking (Nadim & Begum, 2008). In recent times electronic banking has been highly appreciated in the banking sector service provision, and especially in online banking services. Foreign as well as local banks are adopting online banking system to enhance their services. They have adopted superior technology through automated transaction systems for attracting clients and offering inter-branch and inter-bank networking.

Nadim and Begum (2008) observe that these systems seem neglected by the customers, in spite of rigorous efforts by the banks. It is perceived that in e-banking customer impression is quite vital for successful e-banking service delivery. The banking sector has tried to collect more information to discern factors that endear customers to online banking (Gerrard & Cunningham, 2003; Sathye, 1999). Various authors have proposed

different models on customer online banking adoption. These models comprise of technology acceptance model that has its origin from theory of reasoned action, which has become the most widely used, and the theory of planned behaviour.

2.2.1 Technology Acceptance Model

This model is at times referred to as Technology Acceptance Theory (TAT) it addresses the adoption behaviour of customers which is usually assessed by the aim to use a specified system which is predicated on the impression of its usefulness and the convenient usability of the system. Previous authors researched on the fundamental construct of TAMs validity in forecasting the acceptance of individual's and noted that TAMs fundamental construct does not wholly address the explicit effect of technology and the usability factors that actually influence the user's acceptance (Moon & Kim, 2001). Davis, 1989 contents that expected usefulness is usually termed as an individual belief to improve the degree job performance by the application of modern technology of information system. Perceived effortlessness of use shows how easy an individual learns the operations of the emerging technology and information system. The model emphasizes the positive impact of perceived simplicity of use on the impression of the system's usefulness (Gefen, Karahanna, & Straub, 2003).

Pikkarainen, Pikkarainen, Karjaluoto and Pahnla (2004) carried out a survey in Finland to establish the actual impact of perceived usefulness and concluded that it endeared use of inventive, autonomous, self-service and user friendly technologies provided by banks for access of financial services to the users in the twenty first century. Gerrard and Cunningham (2003) noted that the perceived usefulness rested on the services provided

by the bank. These services range from paying utility bills, checking account balances, loan applications, money transfer abroad, and getting pertinent mutual funds information.

Evidence points at the importance of perceived usefulness on adoption intention. Tan and Teo (2000) posit that adaptation of innovations is significantly determined by the perceived usefulness. In conclusion, the likelihood of the adoption of e-banking is dependent on its perceived usefulness (Potaloglu & Ekin, 2001). The major drivers of e-banking acceptance are viewed as the TAM variables which include the aspects of perceived ease of use and perceived usefulness.

2.2.2. Theory of Planned Behaviour

This theory takes in the notion of perceived behavioural control to advance the theory of reasoned action predictive power. It is therefore founded on the fundamental factors of attitude and behavioural control. These variables are perceived to positively impact on persons' behavioural intentions, which instigate an individual's actual action (Ogare, 2013). A person's valuation of self-performance is viewed as attitude. One's supposed ease or difficulty of accomplishing specific behaviours is viewed as perceived behavioural control. Subjective norm is supposed to be an individual's opinion about specific behaviour, predisposed to others perception. Perceived behavioural control, subjective norms and attitude are seen as behavioural intention influencing variables. This hints at the individual's willingness to undertake a particular behaviour and it is presumed to be an immediate forerunner of behaviour. In turn the behaviour is determined by behavioural intention.

In the present time internet usage has mushroomed worldwide and its application intensified. Researches on TPB application to online commerce have equally increased. Tan and Teo (2000) in their study incorporated diffusion of innovation theory and TPB to investigate the expected reasons that affect individual's intention concerning internet usage. In consequent studies, Hunget et al. (2006) observed that TPB actually explains individual's behavioural intention of submitting tax returns online. Hsu et al. (2006) noted the user's persistent behaviour towards online shopping by repeated observation, it involved the application of TPB components such as perceived behavioural control, subject norms, and attitude. The results of the research depict attitude, perceived behavioural control and subjective norms as the major drivers to consumer's continuity of online shopping. Likewise, the concept of equity which is scholarly appreciated (Efebera, Hayes, Hunton, & O'Neil, 2004; Moser, Evans, & Kim, 1995; Jackson & Milliron, 1986) is conspicuously left out in the pre-factors. The findings of the aforesaid scholar literatures demonstrates that TPB could expound on the behavioural manner of individuals in embracing emerging information technology.

2.2.3 Theory of Reasoned Action

Ajzen and Fishbein, (1980) noted that behavioural intentions are a function of significant beliefs and facts about the possibility of carrying out a specific behaviour which leads to a particular result. Behaviour beyond the acceptance of technology has been explained using TRA by employing four ideas; intention to use and actual use, subjective norms and lastly behavioural attitudes. It contends that the costs of particular behaviours are evaluated by individuals who then formulate intentions to act that are in line with those evaluations.

Ogare (2013) studied through a longitudinal analysis of 44 commercial banks in Kenya and the resultant effect of e-banking services provision on perceived financial performance. The study established that the intentions determine individuals' behaviour, and subjective norms and individuals' attitudes determine intention. Attitudes are usually predicted from beliefs of an individual, and the resultant behavioural consequences, this is according to the chain of prediction. Individuals think the behaviour should or is not supposed to be done as anticipated by subjective norms. TRA, viewed from a specific technological perspective affirms inclusion of other factors that impact on behaviour indirectly through affecting both subjective norms and attitudes. TRA is suitable in behaviour prediction regarding use of technology of multimedia. TRA in its theoretical generalization does not particularly specify which identified beliefs would be significant in specific occurrences.

2.3 Determinants of Financial Performance

Various studies have evidenced electronic banking as a determinant of financial performance based on its effect in improving the effectiveness and efficiency of service delivery. Other factors that influence financial performance include size of the bank, capital structure and age.

2.3.1 Size of the Bank

Larger banks leverage on their size to enjoy economies of scale. These include merits associated with cost savings through dispersion of costs that do not rise in proportion to increase in size. Economies of scale advantages are also derived through product diversification where the large banks are able to vary the product mix they offer to their different customers (Hughes & Mester, 2011) and hence attract more customers and

reduce risk. Nzioka (2013) also notes that some measures of bank size such as assets significantly explain the financial performance of a bank.

The larger banks can also rely on their size to strike advantageous financial deals (Mathur & Kenyon, 1998) such as cheaper financial resources. Larger banks leverage on their size and pool of resources signalling stability to negotiate financial deals from a favourable position. Greater growth in financial performance is also much harder to achieve with increase in the size of the bank (Banz, 1981).

2.3.2 Type of Clients

Wholesale banking refers to provision of banking services to corporate clients or government. Retail banking is provision of banking services to individual consumers. Banks dealing in wholesale banking therefore have access to larger deposits from institutions resulting in funds for diversified investment hence higher returns as compared to retail banking where the deposits are mainly from households (Hawaldar, Lokesh & Biso, 2016).

Type of clients served by the bank has an effect on the operating costs of the bank due to the number and frequency of transactions processed. This has an effect on the financial performance of the bank. Banks engaged in wholesale banking tend to have a lower operating cost to income ratio as compared to banks engaged in retail banking (Hawaldar, Lokesh & Biso, 2016).

2.3.3 Capital Adequacy

Is the capital essential for banks to withstand credit risk, market risk and operational risks by absorbing the likely losses (Ongore & Kusa, 2013). Capital adequacy ratio measures

the capacity to weather losses. Banks with higher capital adequacy ratios have enough buffers to absorb losses from the different product lines. It also affects the bank's ability to undertake ventures that are riskier with higher returns.

Adequate capital also boosts the bank's image in the eyes of would-be clients. It shores up the confidence the public place in the banking institution and hence attracts more depositors and favourable treatment from the regulators (Asikhia & Sokefun, 2013) which places the bank at a better position to realize its goal of maximizing financial performance.

2.3.4 Management Efficiency

This is a qualitative aspect referring to the managerial style, systems and policies in place, firm discipline and competence and quality of staff. This has a bearing on the bank's ability to exploit the resources at its disposal efficiently in order to realize set goals and maximize returns (Ikpefan, 2013). Anjichi (2014) carried out a research on the effect of management of assets and liabilities on financial performance and noted that in commercial banks, management of assets and liabilities is the most vital factor that affects performance.

Management efficiency as measured through the magnitude of the bank's operating costs, majorly the fixed costs that are under management's prerogative and are a direct result of management's preferences, that is, luxury or prestige, has a negative association with the bank's financial performance as measured by the return on assets (Ikpefan, 2013).

2.4 Empirical Studies

2.4.1 International Research Studies

Several research studies have been carried out on the performance of banks that have embraced the use of e-banking platform. The main reason is that the profitability of banks utilizing e-banking purely focuses on the impending costs and resultant revenue implications (Guru & Staunton, 2002; Berger, 2003).

A study by Mohammad and Saad (2011) on the impact of electronic banking on the performance of Jordanian banks over the period (2000- 2010) concluded that electronic banking negatively affects banks' performance which was akin to the findings of Delgado, Hernando and Nieto (2007) and Siam (2006). Electronic banking adoption impacts on a bank's risk profile. The risk management principles issued by Basel Committee in July 2003 for electronic banking recognize the related risk factors and the committee's aim was to promote and enhance safety of services provided by online banking while observing flexibility in line with emerging technologies as a result of the turbulent environment.

Nader (2011) observed Saudi Arabia's commercial banks profit efficiency over the period of time ranging from 1998-2007. The survey study findings provide that accessibility of banking via the mobile phone, the ATMs and the various bank branches had a significance on profitability and efficiency in Saudi Arabia's banks. Scrutiny by Malhotra and Singh (2009) on the effect of internet banking on performance of commercial banks in India found that there was insignificant relationship. This corresponds to the deductions of DeYoung (2005) and Arnaboldi and Claeys (2010).

A study done by Hernando and Nieto (2005) on commercial banks numbering 72 in Spain over a period of 1994-2002 to establish their financial performance on the adoption of a transactional website found that there was a significant impact on profitability, which was the same as DeYoung, Lang and Nolle (2007) who observed that profitability is highly realized in internet banks than in non-internet banks in traditional analogue banks. De Young et al. (2007) identified the factors that affect bank's performance in the e-banking platform by undertaking a survey study of United States (US) community banks and did an appraisal on virtual click and mortar banks effect on firm's performance. The study confounded that bank's profits actually improved due to online banking by accelerating meaningful revenue.

Online banking has significant benefits to customers. Internationally most individual bankers are yet to embrace the new technology of electronic banking practices. There are quite a number of reasons for this setback. To begin with, new users of online services are required to undertake lessons on the usage of this platform. Secondly, the non-conversant in this technology always lament on lack of social dimension in electronic banking, they insist on the traditional face-to-face service offered at the bank counters in the various branches (Mattila, Karjaluoto, & Pentto, 2003). At the end customers are reluctantly worried of security issues on electronic practices (Sathye, 1999). This anticipated concern is dissipating over time as online banking is evidently proving to be secure and Finland among other countries has not witnessed a great misuse of this advanced technology. E-banking continues to have a major impact on the growth structure and the banks' practices. Most banks' operations that have constantly remained analogue are strongly being nudged to embrace the changing trends in the emerging ICT

technological growth. This is mostly witnessed in the retail banking activities that has sufficient standards in remote banking activities (Kariuki, 2005).

A consumer acceptance of online banking study by Pikkarainen et al (2004) found that banks get noteworthy cost savings by offering online banking services and that it enables them to trim their branches and reduce on the staff numbers which gives way to self-service channels (Karjaluoto, Koivumäki, & Salo, 2003). Centeno (2004) notes that there are two categories of factors affecting e-banking adoption, these are; factors that relate to retail banking, and those that relate to the infrastructure and technology accessibility comprising of skills and competences on the part of customers in the usage of internet and other associated technologies, internet penetration rate, technological attitude, and internet security and privacy issues. It again involves aspects such as online banking culture, banking culture, mutual trust in banking institutions and push in internet banking.

Berger (2003) observed how bank profits are affected by banks spending in view of the prevailing competition and concluded IT leads to cost saving, but higher spending on IT generates network effects that affect profits negatively. Simpson (2002) posits that operating costs reduction and high revenues realization is a major driver to e-banking. A comparison study between emerging and developed markets depicted that greater revenues and lower operating costs are realized in developed markets. Furst, Lang, and Nolle (2002) contended that the application of click and mortar business model in Federal Chartered US banks results in reasonably high return on equity (ROE). They also noted the banks with greater profitability resulted from embracing internet banking after 1998. Polatoglu and Ekin (2001) undertook a study on Turkish retail banking sector in which they found out that actually e-banking reduces banks' operational costs and it accelerates

customer's satisfaction and retention rate. Sullivan and Richard (2000) studied USA brick and mortar banks and found no significant advantage of internet banking in this practice. Jayawardhena (2000) showed that cost reduction, profitable gains, and efficiency are derived from internet banking, yet it is noticed that very few banks use it and that only fewer clients constituting less than five hundred thousand has so far embraced the technological services in e-banking in the UK.

2.4.1 Local Research Studies

Various studies done in Kenya have also shown the effect of e-banking on performance in the banking industry. Kariuki (2012) studied Kenya's commercial banks and the effect on financial performance due to the different products developed. The study found out that the development of new products positively affected financial performance in Kenya's banks. Yegon (2012) studied the effect on firm performance as affected by ICT investments at the Kenya Commercial Bank Group Limited. The study asserted that the relationship was deemed not quite strong. Osage (2012) conducted a study on Kenya's commercial banks adoption of electronic banking. The study findings revealed that the adoption was of great benefit but was predicated on the bank services being available 24/7, facilitating faster service delivery and customer satisfaction.

Cheruiyot (2010), in his study titled, "Impact of internet banking on Financial Performance of Commercial Banks in Kenya", found that banks offering internet banking are mainly large banks with a large asset base as well as profit margin as contrasted with non-internet banking banks. The results revealed that averagely, internet banks post more profit than non-internet banks. However, the multiple regression results revealed a small, not significant association between a bank's performance and offering internet banking,

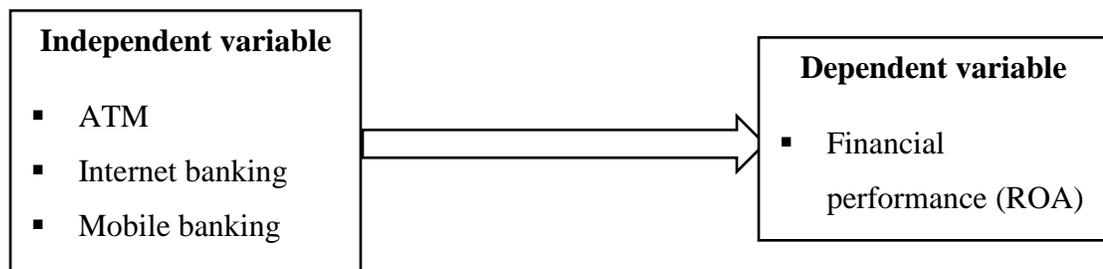
larger significant and negative association with risk profile of the banks meaning that internet based banks become better off from risks such as non-performing loans. However, the benefit expected of internet banking is yet to show some substantial positive financial gains and requires future investigation as internet banking matures in the country.

A research paper done by Kariuki (2005), entitled, “Six Puzzles in Electronic Money and Banking”, showed the positive impacts of ICT on banks’ performance. He established that deployment of e-banking results in increased profits though in long-term but not in short-term due to the initial capital outlay for the ICT investment. Further he offers evidence that the usage of e-banking can result in market share growth, diversified product range and products that are tailored to suit customer needs which ensures that the commercial banks are in an improved position to satisfy customer demands.

2.5 Conceptual Framework

A conceptual framework is necessary to develop on how the relation between e-banking and financial performance of the Kenyan banking industry is correlated and the direction between the pairs.

Figure 1: Conceptual Framework



Source: (Author, 2016)

2.6 Summary of Literature Review

From empirical review of past studies done locally or outside the borders, mix evidence is clearly witnessed on e-banking effect on banks' performance. The local studies were also conducted at a time when internet banking had been in place for a short period in Kenya (Cheruiyot, 2010). There is therefore a gap left in understanding online banking's residual effect on financial performance of commercial banks. This research strived to evidently depict electronic banking's effect, whether positive or negative, on the financial performance of commercial banks in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on the research approach that will be employed to collect the study's relevant data. It includes a description of the type of data, data sources, sampling design, data collection tools and data analysis techniques.

3.2 Research Design

The study put to use descriptive study that was aimed at discovering the effect that e-banking on the financial performance of commercial banks in Kenya. The study was conducted through a survey of the listed commercial banks by the Central Bank of Kenya.

The main reason for selecting descriptive research design is that it provides a knowledge base when little is known about a phenomenon or such things as clarification of a situation, classification of information, or description of subject characteristics that aided in the refinement of the research problem, formulation of the hypothesis, or design of data collection and analysis procedure (Powers & Knapp, 2006). Descriptive studies portrayed the variables by answering who, what and how questions (Babbie, 2002).

3.3 Population

The study was centred on all the 42 commercial banks governed and licensed by the Central Bank of Kenya. A census survey was used.

3.4 Data Collection

The study used secondary data which encompassed a mixture of published and unpublished material pertinent to the research. The secondary data is significant as it includes the logical framework of the research (Sekaran, 2003). For the purpose of the study, the collected secondary data included Central Bank of Kenya periodic reports and financial reports of the commercial banks for the period 2011 to 2015.

Data on financial performance such as earnings and financial ratios were obtained from the audited financial statements while data on electronic banking services such as services offered and their respective quantities were obtained from the various CBK periodic reports.

3.5 Data Analysis

The data was cleaned, sorted and checked for completeness and consistency after collection. Statistical package for the social sciences (SPSS) was then used to analyse the data's descriptive statistics such as maximum, minimum, mean, and standard deviation to outline sample characteristics and significant trends from the collected data. A multiple linear regression model was then employed to estimate the relationships between the variables.

3.5.1 Analytical Model

The regression model was as follows;

$$Y_{bt} = \alpha_0 + \beta_1 ATM_{it} + \beta_2 M_{it} + \beta_3 I_{it} + \varepsilon$$

Where;

Y_{bt} was financial performance represented by ROA of bank b in year t . This will be obtained from the financial statements

α_0 was the estimated value of Y that captures time t invariant influences explicit to bank b

β was the estimated value of Y that captures time t invariant influences explicit to bank b

ATM represented the value of transactions effected through automated teller machines by the bank's customers. This will be derived from the financial statements and CBK periodic reports.

M was the value of transactions effected through mobile banking which will be derived from the financial statements and CBK periodic reports.

I was the value of transactions effected through internet banking as obtained from the banks' financial statements and CBK reports.

t is the year.

ε was the error term

To find the value of α_0 and β , the multivariate regression model was employed. The individual beta estimate reliability was then tested by the p-value in the ANOVA table.

The regression model's significance was tested at 95% confidence interval and 5% level of significance.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

Data analysis and interpretation is discussed under this chapter. The study's objective was to evaluate the effect of e-banking on the financial performance of Kenya's commercial banks. The study's target was the 42 commercial banks registered in Kenya and data was obtained for 41 of the 42 commercial banks. The data sources included CBK bank supervision reports, annual statements for a period of 5 years (2011-2015) as well as other publications. The variables of the study determined the data that was collected, that is, financial performance depicted by return on assets; value of transactions from ATM cards, value of transactions from mobile payments, and value of transactions from internet banking.

4.2 Descriptive Statistics

Descriptive statistics are the measures that summarize the general features of the data set under study. They define the nature of response from primary data and/or secondary data. Descriptive statistics for this study were: minimum, mean, maximum and standard deviation. Descriptive analysis was carried out on the return on assets; total value of transactions from ATM cards, total value of transactions from mobile payments, and total value of transactions from internet banking. The descriptive statistics results are tabulated below:

Table 4.1: Descriptive Statistics

	ROA	ATM cards (Millions)	Mobile payments (millions)	Internet banking (millions)
N	42	42	42	42
Minimum	-7.54	0	0	0
Maximum	7.152	14773.21	10124.981	125109.6
Mean	2.667	8568.242	5872.34	72753.014
Std. Deviation	2.679	4236.359	2903.436	37412.21
Skewness	-1.285	-0.359	-0.359	-0.243
Std. Error	0.365	0.365	0.365	0.365
Kurtosis	3.949	-1.285	-1.285	-1.325
Std. Error	0.717	0.717	0.717	0.717

Table 4.1 above illustrates the average ROA of all the commercial banks in Kenya over the study period to be 2.667 with a maximum of 7.152 and the minimum of -7.54. A small standard deviation of 2.679 was noted implying that there was low variation of ROA across the commercial banks. In addition, the mean of the total value of ATM cards was 8568.242 million recording the highest value of 14773.21 millions. The mean total value of the mobile payments was 5872.34 million with a maximum of 10124.981 millions. The internet banking mean was noted to be 72753.014 millions across the commercial banks. High standard deviations were noted on total value of ATM card transactions, mobile payments as well as internet banking meaning there was a high

variation across all the commercial banks with regards to total transaction value of ATM cards, mobile payments and internet banking

4.3 Correlation Analysis

To measure the strength of the association between the variables, the study put to use the Karl Pearson's coefficient of correlation. The Pearson product-moment correlation coefficient determines the strength of a linear association between two variables and is denoted by r which can take a range of values from +1 to -1. A value of 0 designates that there is no association between the two variables. A value greater than 0 designates a positive association while a value less than 0 designates a negative association. The Pearson's coefficient was employed to ascertain the presence or absence of linear correlation between the variables of e-banking and financial performance. The outcomes are as follows;

Table 4.2: Correlation Analysis

	ROA	ATM Cards	Mobile payments	Internet Banking
ROA(r)	1.000			
(p) Sig. (2 tailed)				
ATM Cards (r)	0.679	1.000		
(p) (2 tailed)	0.009			
mobile payments (r)	0.612	0.326	1.000	
(p) Sig. (2 tailed)	0.013	0.021		
Internet Banking (r)	0.574	0.254	0.076	1.000
(p) Sig. (2 tailed)	0.026	0.123	0.046	

Results from table 4.2 above reveal that there is a significant positive association between use of ATM Cards and financial Performance ($r = .679$, $P\text{-value} < 0.009$). This implies that ATM Cards influences financial performance in commercial banks in Kenya. The findings also disclosed a substantial positive association between mobile payments and financial Performance ($r = .612$, $P\text{-value} < 0.013$). Thus, implying that mobile payments influences financial performance in commercial banks in Kenya

The findings indicated a noteworthy positive association between internet banking and financial Performance ($r = .574$, $P\text{-value} < 0.026$) thus, depicting that internet banking influences financial performance in Kenya's commercial banks.

4.4 Regression Analysis

The researcher conducted a multiple regression analysis so as to test relationship among e-banking variables and financial performance of banks. The researcher made use of the statistical package for social sciences (SPSS V 21.0) to input and compute the study's measurements of the multiple regressions.

Coefficient of determination explains the extent to which changes in the independent variables explain changes in the dependent variable or the percentage of variation in the dependent variable (ROA) that is explained by all the three independent variables (ATM Cards, mobile payments, and internet banking).

4.4.1 Model Summary

Table 4.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.896 ^a	.802	.775	0.0131

a. Predictors: (Constant), ATM Cards, mobile payments, and internet banking

b. Dependent Variable: ROA

Table 4.3 shows model summary of regressed variable of the study. The correlation coefficient (R) value represents the degree and strength of relationship between dependent variable and the independent variables. Coefficient of correlation ranges between -1 and 1 and in this model the coefficient of correlation is 0.896 which indicates a positive correlation between ROA, ATM Cards, mobile payments, and internet banking. The R Squared is the coefficient of determination which indicates how much of the total variation in the dependent variable. From the above the R squared statistic gives the goodness of fit of the model which shows how good the regression model approximates the real data points. The R squared of this model is 0.802 which shows that the model is a good fit of the actual data. The coefficient of determination of 0.802 implies that 80.2% of the variance in dependent variable is explained by changes in the independent variables.

4.4.2 ANOVA (Analysis of Variance)

Table 4.4: ANOVA (Analysis of Variance)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.942	3	2.314	6.51	.001 ^a
	Residual	13.507	38	0.355		
	Total	20.449	41			

a. Predictors: (Constant), ATM Cards, mobile payments, and internet banking

b. Dependent Variable: ROA

The model summary also indicates that the dependent variable (ROA) is significantly accurately predicted by the regression model. The statistical significance of the regression model that was run is shown by the F test. The P=0.001, which is less than 0.05 designates that, generally the regression model statistically and significantly predicts the outcome variable that is good fit for the data.

4.4.3 Coefficient of Correlation

Table 4.5: Coefficient of Correlation

	Unstandardized		Beta	Standardized	
	B	Std. Error		t	Sig.
(Constant)	7.232	0.643		11.24	.0000
Total value from ATM Cards	0.802	0.343	0.23	2.34	.0247
Total value from mobile payments	0.769	0.305	0.46	2.52	.0160
Total value from internet banking	0.593	0.291	0.31	2.04	.0486

The overall equation model for ROA, ATM Cards, mobile payments, and internet banking was as follows:

$$Y_{bt} = 7.232 + 0.802ATM_{it} + 0.769M_{it} + 0.593I_{it} + \varepsilon$$

From the model, in any given month, the ROA will be 7.232 when all the predictor values are zero. The model indicates that when the value processed through ATM Cards changes by one unit the ROA will increase by 0.802. In addition, mobile payments total changes by one unit the ROA increases by 0.769. Further, the study findings revealed that when the internet banking value changes by one unit the ROA will increase by 0.593

To test the significance of each individual variable which was based at 0.05 the t-test was carried out. The result indicates the mobile payments and internet banking have a value of 0.0160 and 0.0486 against the ROA in the model respectively. This shows that the relationship between ROA, mobile payments and internet banking is significant. The

relationship between ROA and ATM cards recorded at rate of 0.0247 which is significant since it's less than p-value (P.0.05).

4.5 Discussion of Findings

The objective of the study was to assess the effect of electronic banking on the financial performance of Commercial Banks in Kenya. This was evaluated by use of secondary data and the succeeding analysis centred on the variables of the study (return on assets, value of ATM transactions, value of mobile banking transactions and value of internet banking transactions).

Results indicate that the regression model is significant in explaining the changes in the independent variable as measured by return on assets caused by changes in the three independent variables namely value of ATM transactions, value of mobile banking transactions and value of internet banking transactions. This is akin to Ogare (2013) findings that indicated that changes in profitability of Kenya's commercial banks is significantly explained by variations in electronic funds transfer.

The study findings indicated that the value processed through ATM cards positively and significantly influenced the financial performance of commercial banks in Kenya. This correlates to Kamochu (2015) who noted that a steady rise in the financial performance of banks has been occasioned through an upsurge in ATM usage as measured by number of ATMs. This also agrees to Irechukwu (2000) who listed initiation of accounts, monitoring of accounts and execution and logging of transactions as some of the banking services that have been transformed by deployment of ICT by banks. He notes that self-service facilities have resulted from embracing ICT and this has enabled bank customers

to be able to authenticate their account numbers and obtain instructions on when and how to receive their credit and debit cards and cheque books.

The study established that mobile banking significantly and positively influences the financial performance of commercial banks in Kenya. This is in line with Mallat, Rossi and Tuunainen (2004) who state that mobile services are among the newest services that the banks offer. Through this service, the customers receive messages on their cell phones when transactions that pertain to the customers such as those involving their cards or accounts take place. This goes a long way into lowering the risk that the customers' account or card are being exploited by an individual who is not the customer. The finding also tallies to Njogu (2014) finding that mobile banking has reinvented the methods of operations of banks in Kenya and positively influenced the performance of the commercial banks.

The study further reveals that internet banking positively and significantly influences the financial performance of commercial banks in Kenya. This correlates with Dabholkar (2009) who states internet banking permits clients to execute transactions at an opportune place and time. The finding also agrees to Agboola (2006) who indicated that modern technology was the major driver of competition in the banking sector. In the study an upsurge in the deployment of various e-banking tools was highly evident. The study indicated that the utilization of modern ICT practices significantly improves the bank's reputation and eventually results to foster efficient and effective service delivery.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter sums up the research findings on the effect of e-banking on the financial performance of commercial banks in Kenya and lays out the conclusions reached and resultant recommendations.

5.2 Summary of Findings

This study examined the effect of e-banking on the financial performance of commercial banks in Kenya. Mobile banking, internet banking and ATMs form the biggest component of e-banking in Kenya. Most retail transactions are effected through mobile banking which has enabled usage of mobile banking to surpass ATM usage currently (CBK annual report, 2015). The study was centred on all the 42 commercial banks governed and licensed in Kenya. Secondary data was collected from the banks and the Central Bank of Kenya for the period 2011 to 2015. To determine the associations between the variables under study, a multiple linear regression model was put to use.

The three independent variables that were studied (ATM cards, mobile banking, and internet banking) explain a substantial influence of 80.2% of operational efficiency among commercial banks in Kenya as represented by R^2 (0.802). Consequently, this implies that 80.2% of the financial performance of commercial banks in Kenya is contributed by the three independent variables examined in this research while other factors and arbitrary variations not studied in this research contribute a meagre 19.8%.

The findings from this research revealed noteworthy headway in appreciating the effect of e-banking on the financial performance of banks in Kenya. It has been shown that adoption of e-banking strategies had a positive effect on banks' profits. According to the established relationship between e-banking and bank's performance, the findings agree that increasing implementation of e-banking results in the increase in performance of commercial banks in Kenya.

The study deciphered that if the ATM cards transactions value changes by one unit the ROA will increase by 0.802. In addition, when transactions from mobile payments total changes by one unit the ROA increases by 0.769. Further, the study findings revealed that when the total value of transactions from internet banking changes by one unit the ROA will increase by 0.593.

5.3 Conclusion

The study indicates that the e-banking independent variables (ATM, mobile and internet banking) measured by the value of transactions effected explain the financial performance of Kenya's commercial banks as measured by the return on assets. This is inferred from the strong relationship between the dependent variable and the independent variables found by the study.

The study concludes that e-banking has contributed positively to the financial performance of Kenya's commercial banks. This is inferred from the trends recorded in the variables where the value of transactions effected through e-banking had a positive and significant influence on financial performance of commercial banks in Kenya. E-banking provides effective and efficient channels that facilitate improved service delivery (Kinyua, 2014) and diversified products tailored to client needs.

The study concludes that use of ATM cards positively and significantly influenced the financial performance of commercial banks in Kenya. In addition, the study concludes that mobile banking significantly and positively influences the financial performance of commercial banks in Kenya. The study further concludes that internet banking positively and significantly influences the financial performance of commercial banks in Kenya. Deployment of ATMs, mobile banking and internet banking has enabled banks to cut down on their costs for offering services to customers and also to expand their reach to a wider market (Njogu, 2014). E-banking has also enabled the banks to increase the volumes of transactions that can be processed in a day to virtually an unlimited number. This works towards improving the performance of the banks.

5.4 Recommendations

Following the findings above, it is this study's recommendation that commercial banks increase their efforts towards adoption of e-banking to automate their service delivery to customers. This follows the positive effect that e-banking usage has on the financial performance of Kenya's commercial banks as noted through the study.

The banking industry's policy makers and regulators also need to cogitate on e-banking as a major input when crafting guidelines to regulate the industry. This is as a result of the major influence that technology has on the performance of the commercial banks. As the country continues to take on developing partners to accentuate its technological capacity, banks will continue to increasingly leverage on technology to improve their performance notwithstanding the risks associated.

The study further recommends that commercial banks keep embracing the use of mobile banking in their day to day operations because the population of people with access to a

cell phone keeps swelling every day. The banks should keep working in tandem with mobile network companies to craft innovative services that are tailored to their targeted market. Examples of such partnerships include M-Shwari service by Commercial Bank of Africa and Safaricom Limited which supports the convenient borrowing and repayment of money from the bank by registered members. With continued growth in technology, this will undoubtedly revolutionize the banking operations for increased profitability.

5.5 Limitations of the Study

The study focussed on the period 2011 to 2015. Technology rapidly changes every day with new ideas being picked up by the market. This study was carried out during a period when banks were just beginning to take note of the potential of technologies such as mobile banking hence it would be vital for a future research to be carried out when the adoption has peaked to determine its effect on the bank's financial performance.

Electronic banking is a relatively new technology and not very many studies have been done especially on its effect on the financial performance of commercial banks. In addition the studies done have tended to concentrate on its adoption. Furthermore, the banking industry is a very competitive environment and as such, the bank management has not disclosed much information for fear of competition.

On the same note, due to the insecurity risks involved in the banks, management in some instances were suspicious of any inquisitive personality especially on issues which are believed to be used by the competitors in extracting sensitive information. The data for the study therefore was limited to secondary data retrieved from various CBK reports and financial statements of the commercial banks which may not be very accurate and required a lot of sorting and checking. The extent of the study was also limited by time to

collect more data from the respective banks, which may have led to improved conclusions.

5.6 Suggestions for Further Research

The banking industry has other players in addition to commercial banks. This study was centred on only the registered commercial banks and excluded mortgage finance companies, cash remittance providers, credit reference bureaus, microfinance banks, foreign banks representation offices and foreign exchange bureaus. It is this studies recommendation that research be carried out on the other players in the banking industry to determine effect of electronic banking on the whole banking industry in Kenya.

The study also recommends that research be carried out on the effect of e-banking on the performance of commercial banks in other countries within East Africa. Most of the major commercial banks in Kenya have expanded into the neighbouring countries and such a research will benefit them to focus their strategies for increasing their returns in the external market.

In addition, the study proposes that research be done in Kenya on the influence of e-banking on the growth of the country's real gross domestic product in order to establish the residual effect of e-banking on Kenya's economy. This will enable the banks and Government understand how e-banking usage translates to the country's economic performance instead of looking at its benefits in isolation.

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APPENDICES

Appendix I: List of Commercial Banks in Kenya as at 22nd July, 2016

1. African Banking Corporation Limited
2. Bank of Africa Kenya Limited
3. Bank of Baroda (K) Limited
4. Bank of India
5. Barclays Bank of Kenya Limited
6. CfC Stanbic Bank Limited
7. Charterhouse Bank Limited
8. Chase Bank (K) Limited
9. Citibank N.A Kenya
10. Commercial Bank of Africa Limited
11. Consolidated Bank of Kenya Limited
12. Co-operative Bank of Kenya Limited
13. Credit Bank Limited
14. Development Bank of Kenya Limited
15. Diamond Trust Bank Kenya Limited
16. Ecobank Kenya Limited
17. Equatorial Commercial Bank Limited
18. Equity Bank Kenya Limited
19. Family Bank Limited
20. Fidelity Commercial Bank Limited
21. First Community Bank Limited

22. Guaranty Trust Bank (K) Limited
23. Giro Commercial Bank Limited
24. Guardian Bank Limited
25. Gulf African Bank Limited
26. Habib Bank A.G Zurich
27. Habib Bank Limited
28. Imperial Bank Limited
29. I & M Bank Limited
30. Jamii Bora Bank Limited
31. KCB Bank Kenya Limited
32. Middle East Bank (K) Limited
33. National Bank of Kenya Limited
34. NIC Bank Limited
35. Oriental Commercial Bank Limited
36. Paramount Bank Limited
37. Prime Bank Limited
38. Sidian Bank Limited
39. Standard Chartered Bank Kenya Limited
40. Trans-National Bank Limited
41. UBA Kenya Bank Limited
42. Victoria Commercial Bank Limited

Source: Central Bank of Kenya – Directory of Licenced Commercial Banks, 2016