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

BY

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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

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DEDICATION

I dedicate this work to my mother, Florence Njoki Kamande for her tremendous support and encouragement.

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LIST OF ABBREVIATIONS

ATM   Automated Teller Machine

CBK   Central Bank of Kenya

CBS   Core Banking Solution

CRM   Customer Relationship Management

NSE   Nairobi Securities Exchange

POS   Point of Sale

RBV   Resource Based View

ROA   Return on Assets

SMS   Short Message Service

TAM   Technology Acceptance Model

VSAT   Very Small Aperture Technology

ABSTRACT

Kenya banking sector has tremendously evolved since the beginning of e-banking to ensure that customers are satisfied and to remain competitive in the ever changing environment. Today, bank customers' enjoy efficient, convenient and fast banking services conveyed through electronic banking such as mobile banking, internet banking, agency banking and ATMS. This study sought to determine the effect of electronic banking on financial performance of commercial banks in Kenya. The study's population was all the 42 commercial banks operating in Kenya. Data was obtained from 41 out of the 42 banks giving a response rate of 97.62%. The independent variable for the study was electronic banking as measured by value of transactions carried out through mobile banking, internet banking, agency banking and ATMs. The control variables were liquidity as measured by the current ratio, firm size as measured by natural logarithm of total assets and capital adequacy as measured by the ratio of gross loans and advances to total assets. Financial performance was the dependent variable which the study sought to explain and it was measured by return on assets. Secondary data was collected for a period of 5 years (January 2013 to December 2017) on an annual basis. The study employed a descriptive cross-sectional research design and a multiple linear regression model was used to analyze the association between the variables. Data analysis was undertaken using the Statistical package for social sciences version 21. The results of the study produced R-square value of 0.373 which means that about 37.3 percent of the variation in the Kenyan commercial banks' financial performance can be explained by the seven selected independent variables while 62.7 percent in the variation of financial performance of commercial banks was associated with other factors not covered in this research. The study also found that the independent variables had a strong correlation with financial performance (R=0.611). ANOVA results show that the F statistic was significant at 5% level with a p=0.000. Therefore the model was fit to explain the relationship between the selected variables. The results further revealed that agency banking, ATMs, capital adequacy, liquidity and bank size produced positive and statistically significant values for this study. The study found that mobile banking and internet banking are statistically insignificant determinants of financial performance of commercial banks. This study recommends that measures should be put in place to enhance agency banking and ATMs services among commercial banks as this will improve their financial performance.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Yilmaz, Alpkan and Ergun (2005) recognize financial innovations as critical enablers for organization's performance by creating value in the undeniably unpredictable and quickly evolving environment. In the dynamic and globally competitive environment, the inability of established banks to come up with breakthrough electronic innovations that will help them operate effectively is a truism today (Davila, 2014). Electronic banking is part of strategy implementation that enhances firm performance through increased expansion and reduced risks (Drucker, 2001). Times have changed and so are the banking operations. Currently, account holders are able to interact with their financial institutions via a variety of channels than before and these channels have a significant impact on whether customers are satisfied and revenue generation. Hans and Kamath (2013) suggested that with the availability of a variety of electronic banking, account holders can now perform their banking transaction for instance, opening deposit accounts, fund transfers, paying utility bills, ordering demand drafts and cheque books, getting account statements and applying for loans without visiting a branch.

This study was guided by several theories such as the technology acceptance model, resource based view theory and the financial intermediation theory that have tried to explain the relationships between electronic banking and financial performance of firms. Technology Acceptance Model (TAM) clarifies the way clients embrace and make use of an innovative idea. TAM will be applied in this study to establish how

technology acceptance influences electronic banking among commercial banks in Kenya. Resource Based View (RBV) theory as developed by Wernerfelt (1984) suggests that resources enables the firm to achieve competitiveness through enhancing innovations thus firms need to focus on how they can identify and use resources to develop a sustained competitive advantage which will enhance their performance. Financial intermediation theory suggests that for financial institutions to boost their performance, they have to enhance customer deposits through creating technologies which would allow clients to transact easily and conveniently.

A lot of dynamism is being witnessed in the business environment which has been attributed to increased technological growth, competition and globalization. This new wave has had a great influence on the performance of Kenya's banking sector. Therefore, in order to remain competitive, the banking sector has been forced to adopt these technological changes. According to Furst, Lang and Nolle (2012), banks have employed new service distribution channels in order to attain competitive advantages in technological financial service industry and attain a competitive edge over other financial institutions. Initially, most people especially the rural households could not open bank accounts due to the bureaucratic processes adopted by banks regarding account opening and ownership. These processes have however been simplified due to increased competition in the banking as they have been forced to formulate innovative ways of undertaking this processes. Several banks have innovatively come up with various technologies such as ATMs, m-banking and internet banking.

1.1.1 Electronic Banking

Electronic banking refers to methods used by banks to deliver customer services (Howcroft, 1993). These channels are described as branchless banking, since they

allow the customers to access financial services without visiting actual bank branches. According to Kimball and Gregor (1995), terms including e-banking, electronic banking, online banking, high tech-banking direct banking and virtual banking are also used by banks to describe alternative banking channels. Improvements in ICT have offered alternative banking channels to customers which allow the account holders to transact from within any location without physically visiting the financial structure. This has facilitated access to banking services by the unbanked population that are too busy to queue in the bank (Kumbhar, 2011).

According to Fisher (1998), the application of innovation in the current banking environment can be split into three categories: customer independent innovation (this innovation allows the customer to conduct and complete a transaction fully without any form of human contact with the bank e.g. ATMs, Internet banking and mobile banking); customer assisted (This is where an employee of the bank uses customer-assisted innovation in completing a transaction for instance the use of Customer Relationship Management (CRM) System by customer service officials to understand the profile of the customer and address the concerns of the customer with regard to banking transactions (Gutek & Welsh, 1999); and the final is customer transparent technology. This defines the actual core of bank's operations which customers never see but affects the level of service offered.

Christopher, Visit, Amy and Mike (2005) cite some of the most commonly used financial innovations by banks as internet banking, bank automation, ATMs, core banking, mobile banking, debit cards and credit cards. Other most commonly used electronic banking include agent banking, internet banking and mobile banking (Chebii, 2013). According to Kumbhar (2011) Indians have adopted various

electronic banking including; ATM, POS Terminals, Core Banking Solution (CBS), internet banking, credit cards, mobile banking, debit cards just to mention a few. Sheleg and Kohali (2011) argue that the use of ATMs, telebanking, mobile banking, social media banking and online banking have been adopted by banks globally.

1.1.2 Financial Performance

Al-Matari, Al-Swidi and Fadzil (2014) define financial performance as the ability of a firm to achieve the range of set financial goals such as profitability. Financial performance can be described as a measure of the extent to which financial benchmarks of a firm has been achieved or surpassed. It shows the extent at which financial objectives are being accomplished. As outlined by Baba and Nasieku (2016) financial performance show how a company uses assets to generate revenues and thus it gives direction to the stakeholder in their decision making. Nzuve (2016) asserts that the health of the bank industry largely depends on their financial performance which is used to indicate the strengths and weaknesses of individual banks. Moreover, the government and regulatory agencies are interested on how banks perform for the regulation purposes.

Financial performance concentrates mainly on things that influence financial statements or reports of a firm directly (Omondi & Muturi, 2013). The performance of the firm's is the main appraisal tool used by external parties (Bonn, 2000). Hence this explains why firm's performance is used as the gauge. The level of attainment of the firm's objectives defines its performance. Financial performance is the results attained from achieving external and internal objectives of a firm (Lin, 2008). Performance has several names, including growth, competitiveness and survival (Nyamita, 2014).

Financial performance can be measured using a number of ratios, for instance, return on assets and net interest margin. ROA is a measure that shows the ability of the bank to utilize the available assets to generate profits (Milinović, 2014). ROA is calculated by dividing operating profit by total asset ratio which is used for calculating earnings from all company's financial resources. On the other hand, NIM measures the spread of the interest paid out to the bank's lenders, for instance, liability accounts, and the interest income that the banks generates in relation to the value of their assets. The NIM variable can be expressed as the net interest income divided by total earnings assets (Gul et al., 2011).

1.1.3 Electronic Banking and Financial Performance

Both past and recent studies on the field of electronic banking have shown a positive association between electronic banking and financial performance measures. The previous paradigm of studying the effects of innovative activities on financial performance has shifted focus to more complex innovative channels and processes that utilize various modes of innovation to attain improved performances in different setups (Loof & Heshmati, 2013; Kemp, 2003; Bessler et al., 2008).

Roberts and Amit (2003) define the significance of mobile banking as a source of competitive advantage and a tool for attaining better financial performance. A positive association has been established between electronic banking and firm financial performance by several studies such as those by (Han et al., 1998) and (Calantone et al., 1995). Innovation is an all rounded activity that is applicable in all firm activities such as production, process, marketing, and even the management of the organization (Kao, 1989). However, product, process and market are the most used in innovation literature (Otero-Neira et al., 2009; Johne & Davies, 2000).

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Mahalaxmi (2013) argues that technological innovation significantly reduces the bank's the transaction costs. Kaleem and Ahmad (2008) also concurs with Mahalaxmi and asserts that electronic banking saves time, minimizes the cost of transactions, provides current information, minimizes inconvenience, reduces human resource requirements, increases operational efficiency, minimizes the risk of carrying cash, improves service quality and facilitates quick responses in the banking sector. However, the benefits of electronic banking can fully be realized by banks if fully embraced by customers (Mahalaxmi 2013). According to Okun (2012), much lower cost deposits could be realized by banks through adoption of electronic banking such as agency banking and Mpesa so as to attract deposits at lower costs. Banks use customer deposits to maximize on interest spread which subsequently increases their profitability.

1.1.4 Commercial Banks in Kenya

Commercial banking business involves accepting deposits, giving credit, money remittances and any other financial services. The industry performs one of the very important role in the financial sector with a lot of emphasizes on mobilizing of savings and credit provision in the economy. According to the Bank supervision yearly Report (2017), industry comprises of Central Bank as the regulatory authority. The industry also has 1 mortgage finance and 42 commercial banks. Among the 42 commercial banks in the country, 30 are locally owned banks, 9 microfinance banks and 14 foreign owned. Among the 42 commercial banks that we have in the Kenyan banking sector only 10 of the 42 are listed at the NSE.

In the 21st century, banking is considered as innovative banking. The banking philosophy has completely been transformed by technological changes along with

many financial innovations which has heightened the competitiveness of Kenya's banking industry. The banking system operates under an environment experiencing huge dynamism and challenges which has necessitated for new product, process and market innovations. The application of information technology has yielded new innovations in product designing and changed their mode of delivery in the banking and finance sectors. Several initiatives are being undertaken in the banking sector to offer better customer services with the aid of new technologies. Internet banking has been employed as a strategic resource for attainment of higher efficiency, reduction of cost and control of operations through replacement of labor intensive and paper based methods with automated processes thus leading to higher profitability and productivity. Innovations in the Kenyan banking sector include; Internet banking, Short Messaging Services (SMS) banking, M-Pesa, ATMs and Very Small Aperture Technology (VSAT) (Ocharo & Muturi, 2016).

1.2 Research Problem

A key assumption of most research work done on the improvement of operations has been electronic banking activities are directly proportional to improvements in performance (Upton & Kim, 1999). The process of technological innovation and implementation forms a critical part in the growth of many nations. A change of past techniques and adoption of local technology similar to that of more advanced industrialized nations lead to indigenous electronic banking (Roehm & Sternthal, 2001). The advancement in technology has made some tasks more efficient and cheaper but it also has its fair share of challenges (Aladwani, 2001). This has seen firms in the banking sector use technology to develop alternative banking channels to reduce costs and enhance efficiency and convenience but still fail (Kombe & Wafula,

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2015). This entails a review of the impact electronic banking have on performance of banks.

The factors influencing financial performance in the banking industry emanates from their nature of target customers and operations of the informal systems. Kenya banking sector has tremendously evolved since the beginning of e-banking to ensure that customers are satisfied and to remain competitive in the ever changing environment. Today, bank customers' enjoy efficient, convenient and fast banking services conveyed through electronic banking such as Mobile banking, online banking and ATMS. The practical and managerial problem that this study intends to solve originates from the perspective that electronic banking are risky ventures associated with failure, exposure in form of litigations and increased fraud and may therefore have a significant negative or positive effect on bank performance depending on how they are handled (Adembesa, 2014).

Studies by previous researchers such as Mwania and Muganda (2011), Francesca and Claeys (2010), Singh and Pooja (2009), Woldesenbet and Batiz- Lazo (2006) and) have shown different findings on the effect of innovations on the performance of the bank. Studies by Singh and Pooja (2009) concluded that innovation had an insignificant effect on the bank's performance, while Mwania and Muganda (2011) and Batiz-Lazo and Woldesenbet (2006) argued that financial innovation significantly influenced bank performance. Other studies conducted such as Musiime and Malinga (2011) who concluded that there exists a significant positive association between Internet banking and customer satisfaction did not address the effect of electronic banking on performance.

Locally, Mulwa (2017) studied the effect of internet -banking on financial performance of commercial banks in Kenya and found that the internet banking had a positive and significant influence on financial performance of commercial banks as measured by return on assets. Muchiri (2017) carried out a study to ascertain the impact of strategic alternative banking channels on the commercial banks' profitability in Kenya and found that strategic alternative banking channels impacts positively on customer deposits, transactional volumes and profitability of commercial banks in Kenya. Kalela (2017) conducted a study to determine the uptake of alternative banking channels and its influence on operational performance of commercial banks in Kenya. The results demonstrated a positive and significant association between banks' performance in terms of cost to income ratio and uptake of both agency banking and mobile banking.

The lack of consensus among international studies on the influence of electronic banking on the commercial banks' financial performance is an enough reason to conduct further studies. In addition, banks in Kenya has adopted electronic banking which despite their many advantages are risky ventures associated with failure, exposure in form of litigations and increased fraud and may therefore have a significant negative or positive effect on bank performance depending on how they are handled. The reviewed studies in the Kenyan context have either failed to show how the Kenyan commercial bank's performance is affected by electronic banking or used a different methodology in arriving at its findings. The current study intends to fill this research gap by scrutinizing the influence of electronic banking on financial performance of commercial banks in Kenya. The electronic banking services covered include internet banking, agency banking, mobile banking and ATMs. The study

intended to answer the following the research question; what is the effect of electronic banking on financial performance of commercial banks in Kenya?

1.3 Objective of the Study

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

1.4 Value of the Study

The results of the research are of great importance to the future researchers, since it can be a point of reference. The findings might also be significant to scholars and researchers, in identifying the research gaps on the related topics of the study as well as reviewing of the empirical literature to institute further areas of research.

The study is timely and will generate information that will be useful to a number of groups of stakeholder in the banking industry, including the management, regulatory authorities and researchers in the banking sector. The management of commercial banks will find the report useful in identifying how they can use financial innovations to increase efficiency of their respective banks.

To the government and other policy makers, this study will be beneficial in aiding the formulation of policies and procedures that would steer commercial banks and other banks in the sector adopt financial innovations that would improve their efficiency which in turn will contribute to the sector performance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter reviews theories that form the foundation of this study. In addition, previous empirical studies that have been carried before on this research topic and related areas are also discussed. The other sections of this chapter include determinants of financial performance, conceptual framework showing the relationship between study variables and a literature review summary.

2.2 Theoretical Framework

This presents review of the relevant theories that explains the relationship between financial innovations and efficiency. The theoretical reviews covered are technology acceptance model, financial intermediation theory and the resource based view theory.

2.2.1 Technology Acceptance Theory

TAM as developed by Davis (1989) clarifies the way clients embrace/acknowledge and utilize an innovation. This model asserts that once a client is given an alternative innovation, some aspects influence their choices on the means and time of utilization. This incorporates its apparent convenience and seen helpfulness. TAM embraces settled causal chain of genuine conduct convictions, goal and disposition. This was produced by social clinicians from the hypothesis of contemplated activity. In Davis' study, two vital parts are recognized; seen convenience and seen helpfulness (Davis, Toxall & Pallister, 2002).

In other studies regarding technology, TAM is widely adopted and greatly contributes to the development of a prediction of an individual's usage of technology (Fishbein &

Ajzen, 2010). Perceived ease of use influences the perceived usefulness and the intention for adoption (Davis, 1989). Despite TAM being an important source for theoretical framework in the study of adoption and use of technology it has many limitations which include the initial purpose designing the model which is parsimony and generality (Dishaw & Strong, 1999), not taking into consideration non-organizational setting of the organization (Davis & Venkatesh 2000), and ignoring the factors which moderate the adoption of ICT (Sun & Zhang, 2006). This theory has affected research in acceptance of technology. In this exploration, TAM will be utilized to discover how the utilization of technology enhances financial performance of commercial banks in Kenya and how the accessibility of technology impacts the utilization of electronic banking in among commercial banks in Kenya.

2.2.2 Financial Intermediation Theory

The financial intermediation theory was advanced by Mises (1912) and postulates that that financial institutions especially banks play a significant role in financial intermediation. The banks play the role of mobilizing customers with surplus money and availing them for lending to those with a shortage at a cost commonly referred to as interest. This association allows the banks to create a state of liquidity since money is taken from customers with short term maturity funds and lend to customers with long term maturity basis (Dewatripont, Tirole & Rochet, 2010). Mises (1912) argues that the banks' role as credit negotiators is characterized by lending borrowed money.

Financial intermediation through borrowing and lending money can thus be described as the key role of the banks. According to Mises (1912), involvement in financial intermediation by banks denies them the role of creating money while retreating from the process presents them with a chance to create money. However Allen and

Santomero (2001) criticize the theory on grounds that it perceives risk management as an emerging factor in the financial sector and puts the concept of participation costs at the front line. This theory is applicable to the study since bank performance could be enhanced by improving customer deposits through development of channels that will facilitate easy and convenient undertaking of bank transactions by the customers.

2.2.3 Resource Based View Theory

This theory was developed by Wernerfelt (1984) and it contends that maintained upper hand and enhanced execution by a firm might be acknowledged by misusing profitable, uncommon, non-substitutable and incompletely imitable assets (Hart, 1995). A significant asset or heap of assets enables a venture to bridle openings and diminish dangers in its condition. An uncommon asset or heap of assets is one that isn't controlled by countless. A non-substitutable asset or heap of assets is one for which a proportional asset can't undoubtedly be made by contending firm or firms. An incompletely imitable asset or heap of assets is one that is hard to imitate or one that can be repeated at a critical cost (Hart, 1995). Ignorant (1983) records these assets to incorporate all abilities, resources, hierarchical procedures, learning and data controlled by a firm.

Assets can just extend the firm esteem in the event that they are utilized in a way that thinks about the dynamic outside business condition (Sirmon, Hitt & Ireland, 2007). The assets can be sorted as substantial or elusive (Mentzer, Min & Bobbitt, 2004). Wagner (2006) contends that electronic banking are defined as the desirable practices acquired from efficient technologies. Desirable practices will support the technological functions in the delivery of services of high quality and sustain superior

performance therefore technological innovation frameworks are resources that fall well within RBV because it leads to improved service delivery and performance.

Under RBV by exploiting technological innovation practices, banks build capabilities for improved financial performance. This theory is relevant to the study because it recognizes organizational processes and electronic banking as resources that can be used to improve the financial performance of organizations.

2.3 Determinants of Financial Performance

An organization's performance can be determined by a number of factors which are either internal or external. Internal factors differ from one bank to the next and are within a bank's scope of manipulation. These comprise of electronic banking, capital size, labor productivity, deposit liabilities, management quality, credit portfolio, interest rate policy, bank size and ownership. External factors affecting the performance of a bank are mainly GDP, macroeconomic policy stability, Inflation, Political instability and Interest rate (Athanasoglou, Brissimis & Delis, 2005).

2.3.1 Electronic Banking

A number of electronic banking services have been adopted by banks in pursuit of improved financial performance. This study discusses the following electronic banking activities; mobile banking, internet banking, agency banking and ATMs.

2.3.1.1 Mobile Banking

This involves the use of mobile devices to avail banking services such as account transactions for instance checking of account balances and transacting with stock market accounts. According to Porteous (2006), mobile banking allows customers to order cheque book, access their account balance, receive debits and credit alerts, do

funds transfer, pay bills from their phones, receive minimum balance alerts and check information including exchange rates and interest rates.

According to Porteus (2006) mobile banking has seen a tremendous growth in both financial service and global banking sectors. This is due to the benefits of mobile banking such as reaching out to a larger customer base and reduction of overall operational costs. The increased adoption of mobile banking has been accelerated by increased demand for convenience by account holders and increased mobile phones adoption. Mobile banking is highly beneficial to the customers since it saves on time and increase convenience while banks have benefited through elimination of barriers that deterred the access to financial services by the customers (Mburu 2013).

2.3.1.2 Internet banking

According to Essinger (1999), internet banking is defined as the undertaking of bank transactions or access to bank accounts via bank websites. It entails the use of telecommunication networks and devices to avail several services and products to customers in order to serve all the potential customers. Munyoki (2013) purports that internet banking serves well in attracting and retaining customers. Internet banking also facilitates penetration into new market and improvement of service quality. Therefore, the bank's performance is significantly influenced by internet banking.

There has been increased application of internet banking by bankers, participants in the financial services' sector, regulators, law and policy makers. This is associated with its perceived benefits such as increase bank revenue, increased flexible in banking and reduction of costs. Others are also interested with internet banking for policy developments. Studies by Karen et al., (2010) cite the existence of inadequate literature on internet banking which has seen continued use speculations when

addressing internet banking issues. Internet banking reduce staffing levels, cuts the bank's costs, increase banking convenience and increase commission income this increasing the profitability of the bank. When compared with other banking services, internet banking is rated the best since it offers customers with flexibility and total control (Essinger, 1999).

2.3.1.3 Agency Banking

Agency banking is where banks form partnerships with shops, construction companies, pharmacies and other retail outlets for easy delivery of financial services by the bank (Kumar, 2006). Mwangi (2011) opines that the selection criteria on these different aspects including their network connectivity, services delivered, ability to execute anti money laundering procedures, financial projections and particular business strategy. The use of bank retail agents may be more efficient and convenient than allowing potential holders and actual account holders to physically visit bank branches thus enhancing financial inclusion (market access) (Lyman, Ivatury & Staschen, 2006). This will expand the banks market leading to increased profits.

As Ndungu and Wako (2015) explain, agency banking was seen to have given another revenue generating avenue to the banks through the deposits and withdrawals by customers, which ultimately increase the profitability of the banks. Studying on how agency banking contributes to financial performance of banks, Njagi (2013) found that aspects such as low costs for the transactions, banks regulation of the agents, and quick access to financial services impacted positively on the performance of the banks on the financial dimension across the Kenyan nation.

2.3.1.4 Automated Teller Machine

ATMs are the oldest and most commonly used form of electronic banking in the banking sector and have been in use for the last half a century. ATMs brought about automated telecommunication devices that aid customers in accessing their accounts for deposits, withdrawals and even transfers without having to enter the banking hall. This innovation brought about convenience and flexibility in the way the banks operate as customers are now able to access their bank information and perform transactions at their convenience as most ATMs operate 24 hours (Hans & Kamath, 2013).

ATMs are also beneficial to the environment as it reduced the paperwork that was in use initially when customers used to visit the bank for all their banking needs (Ogbuji et al., 2012). And even though the high demand for ATMs is being replaced by mobile and internet banking as majority of the customers now have mobile phones and can easily get internet at a low cost, their usage rate is still high both in developing and developed countries and they are expected to be one of the factors that can improve the financial performance of commercial banks (Nyangosi et al., 2009).

2.3.2 Capital Adequacy

According to Athanasoglou et al., (2005), capital is a significant variable in determining bank financial performance. Capital is the owner's contribution which supports the bank's activities and acts as a buffer against negative occurrence. In capital markets that are not perfect, well-capitalized banks must reduce borrowing so as to support a certain index of assets, and as a result of lower prospective bankruptcy costs they tend to face lower funding costs.

A well-capitalized bank has a signaling effect to the market that a performance above average is to be expected. Athanasoglou et al., (2005) realized that capital

contributions positively affected bank profitability, which reflects sound financial condition of banks in Greece. Also, Berger et al., (1987) noted positive causality in both direction between capital contributions and profitability in companies.

2.3.3 Bank Size

Bank size determines the extent to which a firm is affected by legal and financial factors. The size of the bank is also closely linked with the capital adequacy because large banks raise less expensive capital and thus generate huge profits. Bank size has a positive correlation with the return on assets indicating that large banks can achieve economies of scales that reduce operational cost and hence help banks to improve their financial performance (Amato & Burson, 2007). Magweva and Marime (2016) link bank size to capital rations claiming that they are positively related to each other suggesting that as the size increases profitability rises.

The amount of assets owned by an organization determine it size (Amato & Burson, 2007). It is argued that large firms have adequate resources to undertake a number of large projects with better returns than firms with small amounts of total assets. In addition, firms with large amounts of total assets have adequate collateral which they can pledge to access credit and other debt facilities compared to their smaller counterparts (Njoroge, 2014). Lee (2009) established that the total assets controlled by a firm as measured by the total assets have an influence on the level of profitability recorded from one year to another.

2.3.4 Bank Liquidity

Liquidity is defined as the degree in which an entity is able to honor debt obligations falling due in the next twelve months through cash or cash equivalents for example assets that are   short term can be quickly converted into cash. Liquidity results from

the managers' ability to fulfill their commitments that fall due to policy holders as well as other creditors without having to increase profits from activities such as underwriting and investment and as well as their ability to liquidate financial assets. (Adam & Buckle, 2003)

According to Liargovas and Skandalis (2008), liquid assets can be used by firms for purposes of financing their activities and investments in instances where the external finance is not forthcoming.). Firms with higher liquidity are able to deal with unexpected or unforeseen contingencies as well as cope with its obligations that fall due in periods of low earnings. Almajali et al., (2012) noted that firm's liquidity may have significant effect on insurance companies' financial performance; therefore he suggested that insurance companies should aim at increasing their current assets while decreasing their current liabilities. However, Jovanic (1982) noted that an abundance of liquidity may at times result to more harm. He therefore concludes that the effect of liquidity on financial performance of firms is ambiguous.

2.3.5 Macro-Economic Variables

Macroeconomic variables impact on financial performance of commercial banks and especially on bank risk has been of great importance to policy makers. Using GDP growth to control cyclical output effects, which are likely to positively influence the profitability of banks, as the rate of growth in the GDP declines, more especially during recession, banks experience negative returns caused by the lowering of credit quality and increases in defaults (Flamini et al., 2009).

Macroeconomic variables that impact on the performance of banks include legislative laws, inflation rate, interest rate, economic growth level measured using Gross Domestic Product (GDP). Athanasoglou et al., (2005) argues that the GDP trend

influences the demand for bank's assets. A decline in the GDP growth reduces the credit demand which has a negative impact on the banks' profitability. Additionally, a growing economy with positive GDP growth has a high depending on the prevailing business cycle. There is high demand for credit during boom as opposed to recession.

2.4 Empirical Review

Studies have been conducted both locally and internationally to support the relationship between electronic banking and financial performance, but these studies have produced mixed results. Gerstenfield and Wortzel (2007) did an analysis of the link between the use of innovation technologies that are internet-based, various types of innovation and the financial performance on firm level. The data used was selected from European enterprises totaling 7,302. The findings from the empirical investigation showed that internet-based innovation technologies were significant in enabling innovation in the year 2003. The results also showed that all the electronic banking whether internet-enabled or non-internet-enabled product contributed to positive turnover and growth in employment. Additionally, it showed that higher profitability is mostly the result of the innovative activity of the firm.

A study by Donner and Tellez (2008) investigated the effect of mobile banking on economic development in India through linking adoption, impact, and use. The findings revealed that providing method of reducing costs of transfer of money from point to another and offering a platform drives more users into contact with formal financial systems renders m banking/ m-payments systems a vital innovation for developing nations. However, for the actual measure of innovation to be ascertained, multiple studies from multiple theoretical perspectives and methodologies needed to be employed before answering questions regarding adoption and impact.

Malhotra and Singh (2009) studied on influence of internet banking on risk and bank performance and concluded that internet banks are larger, more operationally efficient and more profitable. The findings further revealed that internet banks are better managed and have higher asset quality which lowers building and equipment expenses. The findings also show that Indian internet banks purely rely on deposits and adoption of internet banking by smaller banks has resulted in significant reduction in profitability.

Ching et al., (2011) examined the factors influencing the adoption of m- banking in Malaysia using empirical analysis. TAM was used to measure the level of acceptance of mobile banking in Malaysia. The study's objective was to ascertain the association between constructs of perceived usefulness, perceived risks, perceived ease of use, social norms, perceived relative advantages and perceived innovativeness towards behavioral intention in the adoption of mobile banking. The study's findings revealed that perceived usefulness, relative advantages, perceived risks, personal innovativeness and perceived ease of use were the factors influencing mobile users' behavioral intention to adopt mobile banking services in Malaysia.

Tchouassi (2012) sought to use empirical studies from selected Sub –Saharan Countries to establish whether mobile phones actually contribute in extending banking services to the unbanked. The aim of the study was to find how mobile phones could be used to the unbanked and poor segment of the population. The findings revealed that poor and vulnerable households in Sub-Saharan Africa (SSA) nations are often incur high financial transactions while undertaking basic financial transactions. Therefore, the use of mobile phone could improve the provision of

financial services in this segment and that economic and technological innovation, regulatory and policy innovation was required to extend this services.

Locally, Munyoki (2013) explored the impact of online banking on the financial performance of the 43 Kenyan commercial banks. It was established from the study a negligible positive association exists between online banking and Kenyan financial banks financial performance. The association was to linked to the fact that online banking increase commission income, cuts on costs, increase convenience in banking and reduce staffing levels. The study recommended that security concerns should be addressed by the banks to curb the increases cases of online banking fraud.

A study by Ndungu (2015) examined the influence of alternative banking channels on the performance of Kenyan financial institutions. The study employed the descriptive research design. The secondary data used for the study were retrieved from the CBK annual reports. It was ascertained that alternative banking channels such as agency banking, mobile banking, operating expenses and customer deposits are responsible for 73.4% change in the financial performance of the Kenyan commercial banks. The study established that mobile banking adoption had declined as from 2012. It was recommended that in order to enhance alternative banking, more alternative banking channels and innovations should be adopted by Kenyan commercial banks.

Gichungu and Oloko (2015) examined the influence of innovative technology having on commercial institutions' performance in the country. The goal of the study was to investigate influences of ATM banking, mobile phone banking and other platforms currently being used by people to do banking such as online banking as well as agency banking on the Kenyan financial banks' performance using all the 43 commercial banks. The study concluded that the sampled banks' financial

performance was significantly and positively influenced by these banking platforms between the time frame 2009 and 2013.

Mwiti (2016) explored the influence of alternative banking channels on the financial performance of Kenyan commercial banks. The research used six year (2011-2015) data for analysis. It was indicated that a strong association exists between alternative banking channels and Kenyan commercial banks' financial performance. The study further established that mobile banking, ATMs banking, internet banking and agency banking positively influence financial performance of the commercial banks and in a statistically significant way.

2.5 Conceptual Framework

Independent variables will be mobile banking as measured by percentage change in value of mobile banking transactions per year, internet banking given as percentage change in value of internet banking transactions per year, agency banking given by percentage change in value of agency banking transactions per year and ATM as measured by percentage change in value of mobile banking transactions per year. The control variables will be capital adequacy, liquidity and bank size.

Independent Variables   **Dependent Variable**

Electronic banking		Financial Performance
Mobile banking		Return on Assets
Internet banking	→	
Agency banking		(ROA)
ATMs		

Control Variables		
Capital adequacy		
Bank Liquidity	→	
Bank size		
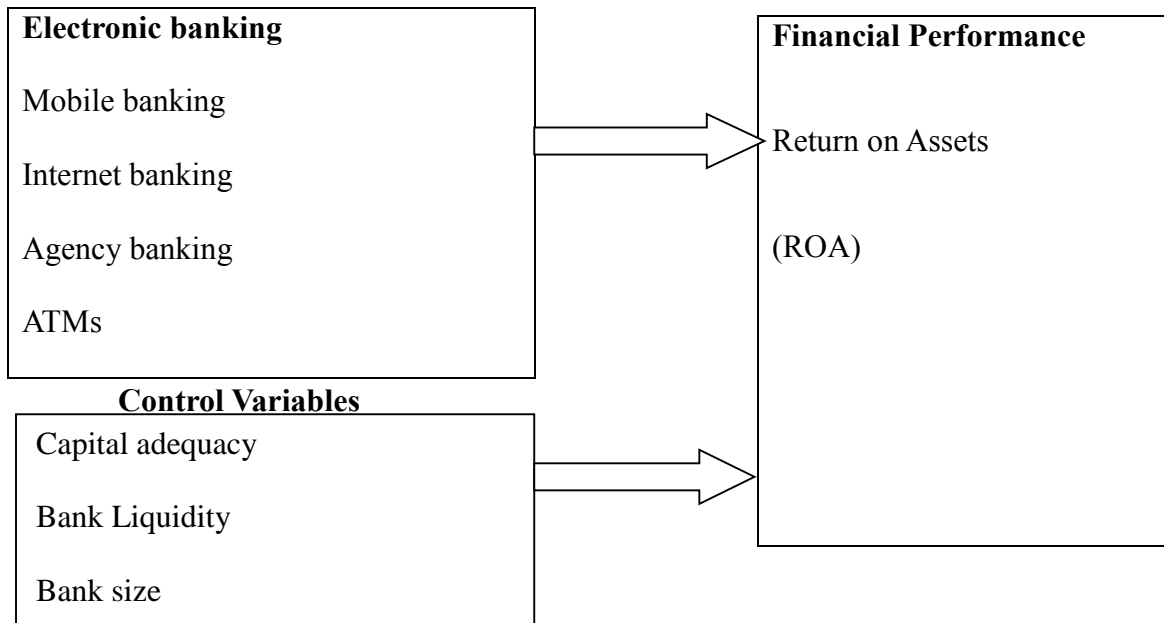
Source: Researcher (2018)

Figure 2.1: The Conceptual Model

2.6 Summary of the Literature Review

A number of theoretical frameworks have explained the theoretically expected relationship between electronic banking services and financial performance of banks. The theories covered in this review are; technology acceptance model, financial intermediation theory and resource based view theory. Some of the key influencers of financial performance have also been explored in this section. Many empirical studies have been conducted both globally and locally on electronic banking and financial performance of firms. The findings of these studies have also been explored in this chapter. The lack of consensus among international studies on the influence of electronic banking on financial performance of commercial banks is an enough reason

to conduct further studies. The reviewed studies in the Kenyan context have either failed to show how the Kenyan commercial bank's financial performance is affected by electronic banking or consider one aspect of electronic banking. The current study intended to fill this research gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In determining the influence of electronic banking on financial performance of commercial banks, a research methodology was necessary to outline how the research was carried out. This chapter has four sections namely; research design, data collection, diagnostic tests and data analysis.

3.2 Research Design

A descriptive cross-sectional research design was employed to investigate the relationship between electronic banking and financial performance of commercial banks. Descriptive design was utilized as the researcher is interested in finding out the state of affairs as they exist (Khan, 2008). This research design was appropriate for the study as the researcher is familiar with the phenomenon under investigation but want to know more in terms of the nature of relationships between the study variables. In addition, a descriptive research aims at providing a valid and accurate representation of the study variables and this helps in responding to the research question (Cooper & Schindler, 2008).

3.3 Population

This study's population comprised of the 42 commercial banks operating in Kenya as at 31/12/2017. Since the population is finite, a census of the 42 banks was undertaken for the study (see appendix one).

3.4 Data Collection

Secondary data was obtained solely from the published annual financial reports of the

commercial banks operating in Kenya between January 2012 and December 2017 and captured in a data collection sheet. The reports were obtained from the Central Bank Website and banks annual reports. The end result was annual information detailing the independent variables and dependent variable for the 42 commercial banks in Kenya.

3.5 Diagnostic Tests

Linearity show that two variables X and Y are connected by a mathematical equation Y=bX in which c is a constant number. The linearity test was acquired by the scatterplot testing or F-statistic in ANOVA. Stationarity test is a process where the statistical properties such as mean, variance and autocorrelation structure do not change with time. Stationarity was obtained from the run sequence plot. Normality is a test for the assumption that the residual of the response variable are normally distributed around the mean. This was determined by Shapiro-walk test or Kolmogorov-Smirnov test. Autocorrelation is the measurement of the similarity between a certain time series and a lagged value of the same time series over successive time intervals. It was tested using Durbin-Watson statistic (Khan, 2008).

Multicollinearity is said to occur when there is a nearly exact or exact linear relation among two or more of the independent variables. This was tested by the determinant of the correlation matrices, which varies from zero to one. Orthogonal independent variable is an indication that the determinant is one while it is zero if there is a complete linear dependence between them and as it approaches to zero then the multicollinearity becomes more intense. Variance Inflation Factors (VIF) and tolerance levels were also carried out to show the degree of multicollinearity (Burns & Burns, 2008).

3.6 Data Analysis

The SPSS software version 21 was used in the analysis of the data. The researcher quantitatively presented the findings using graphs and tables. The results were displayed using frequencies, percentages, measures of central tendencies and dispersion displayed in tables. Inferential statistics included Pearson correlation, multiple regressions, ANOVA and coefficient of determination. The regression model below was used:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon.$$

Where: Y = Financial performance of commercial banks as measured by return on assets on an annual basis

α = y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ = are the slope of the regression

X_1 = Mobile banking as measured by value of mobile banking transactions per year in natural logarithm form

X_2 = Internet banking as measured by value of internet banking transactions per year in natural logarithm form

X_3 = Agency banking as measured by value of agency banking transactions per year in natural logarithm form

X_4 = ATM as measured by value of ATM transactions per year in natural logarithm form

X_5 = Capital adequacy as measured by ratio of loans and advances to assets total per year

X_6 = Bank liquidity as measured by current ratio per year

X_7 = Bank size as measured by natural logarithm of total assets per

year

ε =error term

3.6.1 Tests of Significance

The researcher carried out parametric tests to establish the statistical significance of both the overall model and individual parameters. The F-test was applied in determining the significance of the overall model and it was obtained from Analysis of Variance (ANOVA) while a t-test was applied to establish statistical significance of individual variables.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND INTERPRETATION

4.1 Introduction

The chapter focused on the analysis of collected data from the Central Bank of Kenya to establish the influence of electronic banking on financial performance of the Kenyan commercial banks. Using descriptive statistics, correlation analysis and regression analysis, the results of the study were presented in table forms as shown in the following sections.

4.2 Response Rate

This study targeted all the 42 commercial banks in Kenya as at 31st December 2017. Data was obtained from 41 banks representing a response rate of 97.62%. From the respondents, the researcher was able to obtain secondary data on electronic banking, bank size, liquidity, capital adequacy and financial performance of banks.

4.3 Diagnostic Tests

The researcher carried out diagnostic tests on the collected data. A test of Multicollinearity was undertaken. Tolerance of the variable and the VIF value were used where values more than 0.2 for Tolerance and values below 10 for VIF suggest that there is no Multicollinearity. From the findings, the all the variables had a tolerance values >0.2 and VIF values <10 as shown in table 4.1 suggesting that no Multicollinearity exists.

Table 4.1: Multicollinearity Test for Tolerance and VIF

Variable	Collinearity Statistics	
	Tolerance	**VIF**
Mobile banking	0.352	1.356
Internet banking	0.360	1.382
Agency banking	0.392	1.463
ATM	0.646	1.434
Capital adequacy	0.398	1.982
Bank liquidity	0.388	1.422
Bank size	0.376	1.398

Source: Research Findings (2018)

Shapiro-walk test and Kolmogorov-Smirnov test was applied in testing for normality. The null hypothesis for the test was that the secondary data was not normal. If the p-value recorded was more than 0.05, the researcher would reject it. The results of the test are as shown in table 4.2.

Table 4.2: Normality Test

ROA	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Mobile banking	.178	205	.300	.881	205	.723
Internet banking	.173	205	.300	.918	205	.822
Agency banking	.176	205	.300	.892	205	.784
ATM	.173	205	.300	.918	205	.822

Capital adequacy	.175	205	.300	.874	205	.812
Bank liquidity	.174	205	.300	.913	205	.789
Bank size	.176	205	.300	.892	205	.784
a. Lilliefors Significance Correction						

Source: Research Findings (2018)

Both Kolmogorov-Smirnova and Shapiro-Wilk tests recorded o-values greater than 0.05 which implies that the research data was normally distributed and therefore the null hypothesis was rejected. The data was therefore appropriate for use to conduct parametric tests such as Pearson's correlation, regression analysis and analysis of variance.

Autocorrelation tests were run in order to check for correlation of error terms across time periods. Autocorrelation was tested using the Durbin Watson test. A durbin-watson statistic of 1.960 indicated that the variable residuals were not serially correlated since the value was within the acceptable range of between 1.5 and 2.5.

Table 4.3: Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.611[a]	.373	.351	.015571	1.960

a. Predictors: (Constant), Bank Size, ATMs, Liquidity, Mobile banking, Agency banking, Capital adequacy, Internet banking

b. Dependent Variable: ROA

Source: Research Findings (2018)

4.4 Descriptive Analysis

Descriptive statistics gives a presentation of the average, maximum and minimum values of variables applied together with their standard deviations in this study.

Table 4.4 shows the descriptive statistics for the variables applied in the study. An analysis of all the variables was obtained using SPSS software for the period of five years (2013 to 2017) for all the 41 banks that provided data for this study. The mean, standard deviation, minimum and maximum for all the variables selected for this study are as shown in the table below.

Table 4.4: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA (%)	205	-.053	.067	.02389	.019329
Mobile banking (Ln)	205	4.323	5.588	5.08245	.326780
Internet banking (Ln)	205	6.605	9.712	8.48059	1.167510
Agency banking (Ln)	205	5.656	6.908	6.57928	.244055
ATMs (Ln)	205	8.340	9.513	8.76517	.314658
Capital adequacy (%)	205	.025	.969	.46090	.217898
Liquidity (%)	205	.140	.948	.38181	.129532
Bank Size (Ln)	205	6.794	8.703	7.68560	.534062
Valid N (listwise)	205				

Source: Research Findings (2018)

4.5 Correlation Analysis

The association between any two variables used in the study is established using correlation analysis. This relationship ranges between (-) strong negative correlation and (+) perfect positive correlation. Pearson correlation was employed to analyze the level of association between the commercial banks' financial performance and the independent variables for this study (mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital adequacy).

The study found out that mobile banking, internet banking, agency banking and ATMs and capital adequacy have a positive and statistically insignificant correlation with the commercial banks' financial performance as shown by (r = . 008, p = .915; r = . 082, p = .243; r = .075, p = .284; r = .058, p = .412) respectively. The study also found out that a positive and significant correlation exists between capital adequacy, liquidity and firm size with financial performance as evidenced by (r =. 167, p = .017), (r =. 147, p = .036) and (r = .530, p = .000) respectively. Although the independent variables had an association to each other, the association was not strong to cause Multicollinearity as all the r values were less than 0.70. This implies that there was no multi-collinearity among the independent variables and therefore they can be used as determinants of dividend payout ratio in regression analysis.

Table 4.5: Correlation Analysis

		ROA	Mobile banking	Internet banking	Agency banking	ATMs	Capital adequacy	Liquidity	Bank Size
ROA	Pearson Correlation	1							
	Sig. (2-tailed)								
Mobile banking	Pearson Correlation	.008	1						
	Sig. (2-tailed)	.915							
Internet banking	Pearson Correlation	.082	.691**	1					
	Sig. (2-tailed)	.243	.000						
Agency banking	Pearson Correlation	.075	.057	.114	1				
	Sig. (2-tailed)	.284	.419	.105					
ATMs	Pearson Correlation	.058	.214**	.397**	.105	1			
	Sig. (2-tailed)	.412	.002	.000	.132				
Capital adequacy	Pearson Correlation	.167*	.237**	.194**	.012	.323**	1		
	Sig. (2-tailed)	.017	.001	.005	.862	.000			
Liquidity	Pearson Correlation	.147*	.019	.009	.179*	.003	.117	1	
	Sig. (2-tailed)	.036	.784	.901	.010	.969	.095		
Bank Size	Pearson Correlation	.530**	.069	-.007	.208**	-.003	.032	.138*	1
	Sig. (2-tailed)	.000	.323	.921	.003	.964	.644	.048	

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

c. Listwise N=205

Source: Research Findings (2018)

4.6 Regression Analysis

Financial performance was regressed against seven predictor variables; mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital adequacy. The regression analysis was executed at a significance level of 5%. The critical value obtained from the F – table was measured against the one acquired from the regression analysis.

The study obtained the model summary statistics as shown in table 4.6 below.

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.611[a]	.373	.351	.015571	1.960

a. Predictors: (Constant), Bank Size, ATMs, Liquidity, Mobile banking, Agency banking, Capital adequacy, Internet banking

b. Dependent Variable: ROA

Source: Research Findings (2018)

Based on the outcome in table 4.6 above, the value of R square was 0.373, a discovery that 37.3 percent of the deviations in banks' financial performance is caused by changes in mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital adequacy. Other variables not included in the model justify for 62.7 percent of the variations in financial performance of the Kenyan commercial banks. Also, the results revealed that there exists a weak relationship among the selected independent variables and the financial performance

as shown by the correlation coefficient (R) equal to 0.611. A durbin-watson statistic of 1.960 indicated that the variable residuals were not serially correlated since the value was more than 1.5.

Table 4.7: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.028	7	.004	16.764	.000[b]
	Residual	.048	197	.000		
	Total	.076	204			

a. Dependent Variable: ROA

b. Predictors: (Constant), Bank Size, ATMs, Liquidity, Mobile banking,

Agency banking, Capital adequacy, Internet banking

Source: Research Findings (2018)

The significance value is 0.000 which is less than p=0.05. This implies that the model was statistically significant in predicting how mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital adequacy affects the Kenyan commercial banks' financial performance.

Coefficients of determination were used as indicators of the direction of the association between the independent variables and the commercial banks' financial performance. The p-value under sig. column was used as an indicator of the significance of the association between the dependent and the independent variables. At 95% confidence level, a p-value of less than 0.05 was interpreted as a measure of

statistical significance. As such, a p-value above 0.05 indicates that the dependent

variables have a statistically insignificant association with the independent variables.

The results are indicated in table 4.5

Table 4.8: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.218	.059		-3.701	.000
	Mobile banking	.007	.006	.123	1.273	.204
	Internet banking	.003	.002	.180	1.755	.081
	Agency banking	.014	.005	.182	3.037	.003
	ATMs	.009	.004	.150	2.243	.026
	Capital adequacy	.019	.005	.209	3.399	.001
	Liquidity	.019	.009	.126	2.168	.031
	Bank Size	.019	.002	.536	9.133	.000

a. Dependent Variable: ROA

Source: Research Findings (2018)

From the above results, it is evident that apart from mobile banking and internet

banking, all the other five independent variables produced positive and statistically

significant values for this study (high t-values, $p < 0.05$). Mobile banking and internet

banking were found to be statistically insignificant determiners of financial

performance among commercial banks as shown by p values above 0.05.

The following regression equation was estimated:

$$Y = -0.218 + 0.014X_1 + 0.009X_2 + 0.019X_3 + 0.019X_4 + 0.019X_5$$

Where,

Y = Financial performance

X_1 = Agency banking

X_2 = ATM

X_3 = Capital adequacy

X_4 = Liquidity

X_5 = Bank size

On the estimated regression model above, the constant = -0.218 shows that if selected dependent variables (mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital adequacy) were rated zero, the commercial banks' financial performance would be -0.218. A unit increase in either capital adequacy, liquidity or bank size will result in an increase in financial performance as indicated by 0.019 while a unit rise in agency banking and ATMs would cause a rise in financial performance by 0.014 and 0.009 respectively.

4.7 Discussion of Research Findings

The researcher was seeking to establish the association between electronic banking and financial performance of the Kenyan commercial. Electronic banking in this study was the independent variable in this study with four measures (value of mobile banking transactions per year, value of internet banking transactions per year, value of agency banking transactions per year and value of ATM transactions per year. The control variables were liquidity as measured by the current ratio, firm size as

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measured by natural logarithm of total assets and capital adequacy as measured by ratio of loans and advances to assets total per year. Financial performance was the dependent variable which the study sought to explain and it was measured by return on assets.

The Pearson correlation coefficients between the variables revealed that mobile banking, internet banking, agency banking and ATMs have a positive and statistically insignificant correlation with the commercial banks' financial performance. The study also found out that a positive and significant correlation exists between capital adequacy, liquidity and firm size with financial performance of commercial banks in Kenya.

The model summary revealed that the independent variables: mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital adequacy explains 37.3% of changes in the dependent variable as depicted by R^2 value meaning this model doesn't include other factors that account for 62.7% of changes in the commercial banks' financial performance. The model is fit at 95% level of confidence since the F-value is 16.764. This shows that the overall multiple regression model is statistically significant and is an adequate model for predicting and explaining the influence of the chosen independent variables on the Kenyan commercial banks' financial performance.

The outcomes concur with Ndungu (2015) who examined the influence of alternative banking channels on the performance of Kenyan financial institutions. The study employed the descriptive research design. The secondary data was retrieved from the CBK annual reports. It was established from the study that alternative banking channels such as agency banking, mobile banking, operating expenses and customer

deposits are responsible for 73.4% change in the financial performance of the Kenyan commercial banks. It was also discovered that mobile banking adoption had declined as from 2012. It was recommended that in order to enhance alternative banking, more alternative banking channels and innovations should be adopted by Kenyan commercial banks.

The findings are also in line with Gichungu and Oloko (2015) who examined the influence of innovative technology having on commercial institutions' performance in the country. The goal of the study was to investigate effect of ATM banking, mobile phone banking and other platforms currently being used by people to do banking such as online banking as well as agency banking on the Kenyan financial banks' performance using all the 43 commercial banks in Kenya and the study concluded that the sampled banks' financial performance was significantly and positively influenced by these banking platforms between the time frame 2009 and 2013.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter shows the summary of research findings, the conclusions made from the results, and the recommendations for policy and practice to achieve the expected financial performance Kenyan commercial banks. Major limitations encountered are also discussed in the chapter and suggestions for future researchers.

5.2 Summary of Findings

The researcher was seeking to undersee the impact of electronic banking on the Kenyan financial bank's financial performance. The independent variables for the study were mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital adequacy. A descriptive cross-sectional research design was employed in the study. Secondary data was obtained from CBK. The study used annual data for 41 commercial banks covering a period of five years from January 2013 to December 2017.

Based on the results of correlation analysis, mobile banking, internet banking, agency banking and ATMs were found to have a positive and statistically insignificant correlation with the commercial banks' financial performance. It was also discovered that a positive and notable correlation exists between capital adequacy, liquidity and firm size with financial performance Kenyan commercial banks.

The co-efficient of determination R-square value was 0.373 which means that about 37.3 percent of the variation in financial performance of the Kenyan commercial

banks can be elaborated by the seven selected independent variables while 62.7 percent in the variation of financial performance was associated with other factors not covered in this research. The study also found a strong correlation between the independent variables and the commercial banks' financial performance (R=0.611). ANOVA results indicate that the F statistic was at 5% significance level with a p=0.000. Therefore the model was fit in explaining the association between the selected variables.

The regression results show that when all the independent variables selected for the study have zero value the financial performance of commercial banks will be -0.218. A unit increase in either capital adequacy, liquidity or bank size will result in an increase in financial performance as indicated by 0.019 while a unit rise in agency banking and ATMs would cause a rise in financial performance by 0.014 and 0.009 respectively.

5.3 Conclusion

It can be concluded from the findings that the Kenyan commercial banks' financial performance is significantly affected by agency banking, ATM, capital adequacy, liquidity and bank size. The study therefore concludes that a unit increase in these variables causes a significant increase in financial performance of commercial banks. It was unveiled that mobile banking and internet banking are statistically insignificant determinants of financial performance and therefore this study concludes that these variables do not influence to a large extent the Kenyan commercial bank's financial performance

This study concludes that independent variables selected for this study mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital adequacy influence to a large extent financial performance of commercial banks in Kenya. Thus, a conclusion can sufficiently be made that these variables significantly influence financial performance of commercial banks as reflected by the p value in anova summary. Seven independent variables explain 37.3% of changes in financial performance. This implys that the variables not included in the model explain 62.7% of changes in the financial performance

The outcomes concur with Munyoki (2013) who did an analyses of the influence of online banking on the financial performance of Kenyan commercial banks. The study discovered a weak but positive and notable relation between online banking and financial performance of commercial banks in Kenya..

5.4 Recommendations

The study established that agency banking and internet banking have a positive and notable influence on financial performance of commercial banks. Thus the study wishes to make the following recommendations for policy change: Commercial banks in Kenya should invest heavily in electronic banking like ATMs and agency banking since this will lead to enhanced financial performance of the banks. The Kenyan Government through the Central bank should come up with policies that create a conducive environment for commercial banks to operate in since it will translate to economic growth of the country.

The study unveiled a positive relationship exists between financial performance and liquidity position. This study recommends that a comprehensive assessment of a

firm's immediate liquidity position should be undertaken before investing in a long term project as firm's liquidity has been discovered to be a significant determiner of financial performance.

The study found out that a positive relationship exists between financial performance and size of a bank. This study recommends that banks' management and directors should aim at increasing their asset base by coming up with measures and policies aimed at enlarging the banks' assets as this will eventually have a direct influence on financial performance of the bank. From the findings of this study, big banks in terms of asset base are expected to perform better than small banks and therefore banks should strive to grow their asset base.

5.5 Limitations of the Study

The scope of this research was for five years 2013-2017. It has not been determined if the results would hold for a longer study period. Furthermore it is uncertain whether similar findings would result beyond 2017. A longer study period is more reliable as it will take into account major economic conditions such as booms and recessions.

Data quality is one of the study limitations. From this research, it is hard to conclude whether the results present the true facts about the situation. The data that has been used is only assumed to be accurate. There is also a great inconsistency in the measures used depending on the prevailing conditions. Secondary data was employed in the study which was already existent as opposed to primary data which was raw information. The study also considered selected determinants of and not all the factors affecting financial performance of commercial banks mainly due to limitation of data availability.

For data analysis purposes, the researcher applied a multiple linear regression model. Due to the shortcomings involved when using regression models such as erroneous and misleading results when the variable values change, the researcher cannot be able to generalize the findings with certainty. If more and more data is added to the functional regression model, the hypothesized relationship between two or more variables may not hold.

5.6 Suggestions for Further Research

This study focused on electronic banking and financial performance of commercial banks in Kenya and relied on secondary data. A research study where data collection depends on primary data covering all the 42 commercial banks registered with the CBK is recommended so as to compliment this research.

The study didn't exhaust all the independent variables influencing financial performance of commercial banks in Kenya and a recommendation is give that further studies be carried out to incorporate other variables like management efficiency, growth opportunities, industry practices, age of the firm, political stability and other macro-economic variables. Establishing the effect of each variable on financial performance will enable policy makers know what tool to use when controlling the financial performance.

The study concentrated on the last five years since it was the most recent data available. Future studies may use a range of many years e.g. from 2000 to date and this can help confirm or disapprove this study's findings. The study limited itself by focusing on financial institutions. The recommendations of this study are that further studies be carried out on other sectors in Kenya. Finally, due to regression models'

limitations, other models such as the Vector Error Correction Model (VECM) may be

applied in explanation of the various relationships among variables

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APPENDICES

Appendix I: List of Commercial Banks in Kenya as at 31ˢᵗ December 2017

1. African Banking Corporation Ltd.

2. Bank of Africa Kenya Ltd.

3. Bank of Baroda (K) Ltd.

4. Bank of India

5. Barclays Bank of Kenya Ltd.

6. CFC Stanbic Bank Ltd.

7. Chase Bank (K) Ltd.

8. Citibank N.A Kenya

9. Commercial Bank of Africa Ltd.

10. Consolidated Bank of Kenya Ltd.

11. Co-operative Bank of Kenya Ltd.

12. Credit Bank Ltd.

13. Development Bank of Kenya Ltd.

14. Diamond Trust Bank (K) Ltd.

15. Dubai Bank Kenya Ltd.

16. Ecobank Kenya Ltd

17. Equatorial Commercial Bank Ltd.

18. Equity Bank Ltd.

19. Family Bank Ltd

20. Fidelity Commercial Bank Ltd

21. First community Bank Limited

22. Giro Commercial Bank Ltd.

23. GTB Ltd

24. Guardian Bank Ltd

25. Gulf African Bank Limited

26. Habib Bank A.G Zurich

27. Habib Bank Ltd.

28. Housing Finance

29. Imperial Bank Ltd

30. Investment & Mortgages Bank Ltd

31. Jamii Bora Bank.

32. Kenya Commercial Bank Ltd

33. Middle East Bank (K) Ltd

34. National Bank of Kenya Ltd

35. NIC BANK

36. Oriental Commercial Bank Ltd

37. Paramount Universal Bank Ltd

38. Prime Bank Ltd

39. Sidian Bank Ltd

40. Standard Chartered Bank (K) Ltd

41. Trans-National Bank Ltd

42. UBA Kenya Bank.

Appendix II: Research Data

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
ABC Bank	2013	5.350	6.611	6.685	8.527	0.027	0.513	0.425	7.280
	2014	5.338	6.605	6.725	8.417	0.022	0.456	0.380	7.293
	2015	5.446	6.741	6.571	8.542	0.013	0.676	0.306	7.331
	2016	5.365	6.717	6.571	8.570	0.012	0.745	0.214	7.344
	2017	5.439	6.748	6.571	8.660	0.007	0.723	0.271	7.351
Bank of Baroda	2013	5.429	6.749	6.503	8.605	0.033	0.274	0.558	7.664
	2014	5.476	6.790	6.503	8.713	0.041	0.325	0.606	7.716
	2015	5.514	6.790	6.503	8.792	0.039	0.289	0.605	7.792
	2016	5.511	6.796	6.571	8.724	0.031	0.295	0.615	7.834
	2017	5.544	6.805	6.571	8.776	0.039	0.275	0.652	7.919

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COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
Barclays	2013	5.465	6.768	6.397	8.768	0.050	0.643	0.468	8.267
	2014	5.588	6.883	6.571	8.962	0.039	0.666	0.450	8.316
	2015	5.184	8.201	6.685	8.801	0.039	0.664	0.442	8.354
	2016	5.152	8.146	6.620	8.772	0.036	0.653	0.341	8.382
	2017	5.261	8.251	6.620	8.886	0.028	0.637	0.283	8.414
Bank of Africa	2013	5.229	8.238	6.503	8.341	0.011	0.116	0.256	7.690
	2014	5.289	8.266	6.707	8.345	0.015	0.132	0.345	7.722
	2015	5.247	8.139	6.812	8.362	0.003	0.166	0.283	7.794
	2016	5.303	8.154	6.790	8.420	-0.016	0.147	0.415	7.841
	2017	5.331	8.163	6.753	8.433	0.000	0.127	0.422	7.748
Bank of	2013	5.330	8.167	6.503	8.388	0.041	0.701	0.659	7.716

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
India									
	2014	5.348	8.230	6.503	8.419	0.039	0.691	0.752	7.792
	2015	5.314	6.919	6.571	8.485	0.031	0.702	0.742	7.834
	2016	5.419	6.686	6.571	8.744	0.039	0.650	0.565	7.919
	2017	4.960	9.506	6.397	9.513	0.050	0.538	0.610	8.267
Chase bank	2013	4.950	9.454	6.657	9.499	0.021	0.733	0.430	7.691
	2014	4.901	9.523	6.657	9.218	0.025	0.661	0.410	7.884
	2015	4.960	9.539	6.657	9.146	0.025	0.595	0.464	8.030
	2016	5.067	9.618	6.812	9.059	0.003	0.608	0.430	7.150
	2017	5.027	9.460	6.812	9.093	-0.015	0.550	0.410	7.144
Citibank	2013	5.092	9.486	6.790	8.827	0.061	0.383	0.470	7.842
	2014	5.125	9.625	6.802	8.790	0.043	0.355	0.270	7.853

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2015	5.110	9.605	6.790	8.689	0.032	0.403	0.360	7.900
	2016	5.166	9.644	6.812	8.683	0.041	0.573	0.328	7.945
	2017	5.166	9.630	6.812	8.822	0.036	0.561	0.258	8.014
Commercial Bank of Africa	2013	5.207	9.712	5.991	8.943	0.029	0.289	0.820	8.002
	2014	4.737	9.436	5.991	8.886	0.031	0.551	0.625	8.096
	2015	4.760	9.400	6.096	8.936	0.025	0.431	0.798	8.245
	2016	4.837	9.480	6.096	8.981	0.025	0.765	0.762	8.298
	2017	4.765	9.426	6.215	8.921	0.032	0.580	0.948	8.324
Consolidated bank	2013	4.855	9.492	6.790	8.992	0.008	0.248	0.476	7.255

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2014	4.820	9.415	6.802	9.069	-0.006	0.241	0.411	7.225
	2015	4.862	9.433	6.790	9.227	-0.018	0.358	0.340	7.178
	2016	4.878	9.501	6.812	9.257	0.003	0.228	0.367	7.150
	2017	4.873	9.479	6.812	9.228	-0.015	0.221	0.451	7.144
Credit bank	2013	4.925	9.526	6.096	9.242	0.025	0.514	0.470	6.807
	2014	4.934	9.513	6.096	9.222	0.025	0.530	0.270	6.864
	2015	5.012	9.617	6.215	9.481	0.032	0.587	0.360	6.948
	2016	4.771	9.551	6.790	8.385	0.008	0.693	0.328	7.012
	2017	4.721	9.423	6.790	8.340	0.009	0.607	0.258	7.086
Development Bank of Kenya	2013	4.692	9.424	6.593	8.393	0.019	0.535	0.489	7.491

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2014	4.688	9.403	6.593	8.353	0.033	0.592	0.367	7.638
	2015	4.677	9.420	6.593	8.365	0.034	0.508	0.322	7.791
	2016	4.602	9.209	6.551	8.380	0.027	0.693	0.165	7.910
	2017	4.529	9.340	6.709	8.548	0.004	0.763	0.327	7.842
Diamond Trust Bank	2013	4.547	9.331	6.397	8.685	0.050	0.795	0.400	8.267
	2014	4.455	9.336	6.571	8.822	0.039	0.785	0.318	8.316
	2015	4.489	9.384	6.685	8.797	0.039	0.697	0.399	8.354
	2016	4.335	9.256	6.620	8.755	0.036	0.668	0.400	8.382
	2017	4.323	9.324	6.620	8.966	0.028	0.683	0.335	8.414
Dubai bank	2013	5.350	6.611	6.503	8.527	0.033	0.307	0.357	7.664
	2014	5.338	6.605	6.503	8.417	0.041	0.229	0.346	7.716

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2015	5.446	6.741	6.503	8.542	0.039	0.328	0.286	7.792
	2016	5.365	6.717	6.571	8.570	0.031	0.810	0.275	7.834
	2017	5.439	6.748	6.571	8.660	0.039	0.746	0.227	7.919
Ecobank	2013	5.429	6.749	6.685	8.605	-0.036	0.156	0.390	7.502
	2014	5.476	6.790	6.685	8.713	-0.026	0.174	0.370	7.567
	2015	5.514	6.790	5.656	8.792	-0.008	0.336	0.410	7.662
	2016	5.511	6.796	5.808	8.724	0.002	0.322	0.310	7.720
	2017	5.544	6.805	6.503	8.776	-0.041	0.377	0.140	7.673
Equatorial Commercial bank/Spire Bank	2013	5.465	6.768	5.808	8.768	-0.036	0.393	0.401	7.149

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2014	5.588	6.883	5.656	8.962	0.004	0.444	0.287	7.192
	2015	5.184	8.201	5.808	8.801	-0.020	0.384	0.296	7.220
	2016	5.152	8.146	6.061	8.772	-0.031	0.328	0.224	7.160
	2017	5.261	8.251	5.808	8.886	-0.053	0.270	0.390	7.140
Family bank	2013	5.229	8.238	6.593	8.341	0.019	0.142	0.380	7.491
	2014	5.289	8.266	6.593	8.345	0.033	0.104	0.460	7.638
	2015	5.247	8.139	6.593	8.362	0.034	0.090	0.540	7.791
	2016	5.303	8.154	6.551	8.420	0.027	0.188	0.570	7.910
	2017	5.331	8.163	6.709	8.433	0.004	0.295	0.353	7.842
Fidelity bank	2013	5.330	8.167	6.620	8.388	0.018	0.582	0.285	7.234
	2014	5.348	8.230	6.659	8.419	0.015	0.529	0.331	7.409
	2015	5.314	6.919	6.659	8.485	0.018	0.569	0.298	7.518

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2016	5.419	6.686	6.659	8.744	0.015	0.462	0.385	7.468
	2017	4.960	9.506	6.659	9.513	0.015	0.507	0.300	7.472
First Community Bank	2013	4.950	9.454	6.620	9.499	0.024	0.437	0.420	6.998
	2014	4.901	9.523	6.659	9.218	0.012	0.465	0.320	7.053
	2015	4.960	9.539	6.659	9.146	0.004	0.486	0.310	7.184
	2016	5.067	9.618	6.659	9.059	-0.001	0.495	0.300	7.163
	2017	5.027	9.460	6.908	9.093	-0.004	0.615	0.355	7.175
Giro Commercial Bank Ltd	2013	5.092	9.486	6.791	8.827	0.040	0.598	0.333	7.290

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2014	5.125	9.625	6.620	8.790	0.042	0.797	0.313	8.043
	2015	5.110	9.605	6.620	8.689	0.023	0.966	0.300	8.138
	2016	5.166	9.644	6.620	8.683	0.041	0.366	0.303	8.170
	2017	5.166	9.630	6.620	8.822	0.041	0.446	0.355	8.215
Guaranty Trust Bank	2013	5.207	9.712	6.620	8.943	0.018	0.782	0.340	7.234
	2014	4.737	9.436	6.659	8.886	0.015	0.419	0.305	7.409
	2015	4.760	9.400	6.659	8.936	0.018	0.867	0.340	7.518
	2016	4.837	9.480	6.659	8.981	0.015	0.520	0.370	7.468
	2017	4.765	9.426	6.659	8.921	0.015	0.475	0.340	7.472
Guardian Bank	2013	4.855	9.492	6.438	8.992	0.016	0.466	0.420	7.167

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2014	4.820	9.415	6.438	9.069	0.019	0.381	0.380	7.108
	2015	4.862	9.433	6.438	9.227	0.019	0.383	0.230	7.163
	2016	4.878	9.501	6.438	9.257	0.016	0.394	0.202	7.165
	2017	4.873	9.479	6.438	9.228	0.016	0.471	0.368	7.167
Gulf African Bank	2013	4.925	9.526	6.321	9.242	0.045	0.279	0.331	8.291
	2014	4.934	9.513	6.503	9.222	0.045	0.285	0.308	8.343
	2015	5.012	9.617	6.215	9.481	0.047	0.295	0.280	8.347
	2016	4.771	9.551	6.215	8.385	0.028	0.266	0.211	8.369
	2017	4.721	9.423	5.897	8.340	0.037	0.280	0.460	8.399
Habib Bank Ltd	2013	4.692	9.424	6.753	8.393	0.027	0.277	0.340	6.945

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2014	4.688	9.403	6.753	8.353	0.017	0.240	0.304	6.985
	2015	4.677	9.420	6.753	8.365	0.013	0.261	0.291	7.010
	2016	4.602	9.209	6.753	8.380	0.016	0.240	0.477	7.019
	2017	4.529	9.340	6.753	8.548	0.011	0.216	0.358	7.016
Standard Chartered Bank Kenya Ltd	2013	4.547	9.331	6.321	8.685	0.045	0.820	0.326	8.291
	2014	4.455	9.336	6.503	8.822	0.045	0.888	0.338	8.343
	2015	4.489	9.384	6.215	8.797	0.047	0.801	0.376	8.347
	2016	4.335	9.256	6.215	8.755	0.028	0.855	0.337	8.369
	2017	4.323	9.324	5.897	8.966	0.037	0.868	0.460	8.399

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
NIC Bank	2013	5.350	6.611	6.551	8.527	0.042	0.078	0.679	8.035
	2014	5.338	6.605	6.455	8.417	0.041	0.091	0.414	8.083
	2015	5.446	6.741	6.503	8.542	0.043	0.148	0.737	8.164
	2016	5.365	6.717	6.503	8.570	0.039	0.191	0.546	8.219
	2017	5.439	6.748	6.589	8.660	0.036	0.239	0.390	8.229
National Bank	2013	5.429	6.749	6.215	8.605	0.011	0.265	0.340	7.827
	2014	5.476	6.790	6.657	8.713	0.014	0.221	0.440	7.966
	2015	5.514	6.790	6.657	8.792	0.007	0.229	0.420	8.089
	2016	5.511	6.796	6.657	8.724	-0.010	0.253	0.380	8.096
	2017	5.544	6.805	6.321	8.776	0.001	0.303	0.230	8.061
KCB Bank	2013	5.465	6.768	6.707	8.768	0.038	0.294	0.202	8.484

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2014	5.588	6.883	6.707	8.962	0.040	0.280	0.368	8.509
	2015	5.184	8.201	6.707	8.801	0.045	0.284	0.331	8.576
	2016	5.152	8.146	6.589	8.772	0.039	0.382	0.308	8.670
	2017	5.261	8.251	6.589	8.886	0.041	0.283	0.280	8.703
I&M Bank	2013	5.229	8.238	6.791	8.341	0.040	0.271	0.211	7.290
	2014	5.289	8.266	6.620	8.345	0.042	0.267	0.460	8.043
	2015	5.247	8.139	6.620	8.362	0.023	0.236	0.340	8.138
	2016	5.303	8.154	6.620	8.420	0.041	0.241	0.304	8.170
	2017	5.331	8.163	6.620	8.433	0.041	0.526	0.291	8.215
Jamii Bora Bank Ltd	2013	5.330	8.167	6.321	8.388	0.045	0.530	0.477	8.291
	2014	5.348	8.230	6.503	8.419	0.045	0.537	0.358	8.343

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2015	5.314	6.919	6.215	8.485	0.047	0.452	0.326	8.347
	2016	5.419	6.686	6.215	8.744	0.028	0.139	0.338	8.369
	2017	4.960	9.506	5.897	9.513	0.037	0.939	0.376	8.399
HFCK	2013	4.950	9.454	6.753	9.499	0.019	0.728	0.337	7.609
	2014	4.901	9.523	6.753	9.218	0.019	0.673	0.376	7.670
	2015	4.960	9.539	6.790	9.146	0.016	0.587	0.679	7.782
	2016	5.067	9.618	6.753	9.059	0.021	0.476	0.414	7.001
	2017	5.027	9.460	6.790	9.093	0.011	0.437	0.737	7.000
Equity Bank	2013	5.092	9.486	6.657	8.827	0.056	0.388	0.546	8.334
	2014	5.125	9.625	6.551	8.790	0.056	0.347	0.390	8.377
	2015	5.110	9.605	6.828	8.689	0.067	0.346	0.340	8.441
	2016	5.166	9.644	6.834	8.683	0.052	0.348	0.440	8.533

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2017	5.166	9.630	6.657	8.822	0.042	0.347	0.604	8.579
Co-operative Bank	2013	5.207	9.712	6.657	8.943	0.040	0.310	0.480	8.300
	2014	4.737	9.436	6.551	8.886	0.042	0.357	0.400	8.360
	2015	4.760	9.400	6.828	8.936	0.033	0.369	0.340	8.451
	2016	4.837	9.480	6.834	8.981	0.034	0.683	0.240	8.531
	2017	4.765	9.426	6.828	8.921	0.038	0.679	0.230	8.544
CFC Stanbic	2013	4.855	9.492	6.753	8.992	0.023	0.594	0.202	7.670
	2014	4.820	9.415	6.790	9.069	0.029	0.763	0.368	7.782
	2015	4.862	9.433	6.620	9.227	0.032	0.754	0.331	8.234
	2016	4.878	9.501	6.685	9.257	0.025	0.875	0.308	8.298
	2017	4.873	9.479	6.685	9.228	0.022	0.535	0.280	8.312

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
Krep Bank	2013	4.925	9.526	6.685	9.242	0.021	0.799	0.211	6.980
	2014	4.934	9.513	6.685	9.222	0.032	0.906	0.460	7.121
	2015	5.012	9.617	6.725	9.481	0.035	0.889	0.340	7.199
	2016	4.771	9.551	6.725	8.385	0.021	0.530	0.304	7.281
	2017	4.721	9.423	6.725	8.340	0.001	0.403	0.368	7.320
Middle East Bank (K) Ltd	2013	4.692	9.424	6.685	8.393	0.015	0.046	0.390	6.861
	2014	4.688	9.403	6.685	8.353	0.012	0.075	0.380	6.905
	2015	4.677	9.420	6.725	8.365	0.016	0.075	0.460	7.017
	2016	4.602	9.209	6.725	8.380	0.015	0.084	0.540	7.022
	2017	4.529	9.340	6.725	8.548	0.011	0.364	0.570	6.974
Oriental	2013	4.547	9.331	6.774	8.685	0.017	0.560	0.353	6.794

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
Commercial Bank Ltd									
	2014	4.455	9.336	6.774	8.822	0.021	0.524	0.285	6.846
	2015	4.489	9.384	6.774	8.797	0.010	0.526	0.331	6.895
	2016	4.335	9.256	6.774	8.755	0.005	0.555	0.298	6.929
	2017	4.323	9.324	6.753	8.966	0.004	0.025	0.385	6.997
Paramount Universal Bank Ltd	2013	5.350	6.611	6.685	8.527	0.015	0.969	0.300	6.861
	2014	5.338	6.605	6.685	8.417	0.012	0.718	0.420	6.905
	2015	5.446	6.741	6.725	8.542	0.016	0.710	0.320	7.017
	2016	5.365	6.717	6.725	8.570	0.015	0.636	0.310	7.022

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2017	5.439	6.748	6.725	8.660	0.011	0.567	0.300	6.974
Prime Bank	2013	5.429	6.749	6.774	8.605	0.021	0.491	0.355	6.846
	2014	5.476	6.790	6.774	8.713	0.010	0.492	0.333	6.895
	2015	5.514	6.790	6.774	8.792	0.033	0.448	0.313	7.740
	2016	5.511	6.796	6.657	8.724	0.034	0.423	0.300	7.813
	2017	5.544	6.805	6.657	8.776	0.029	0.437	0.303	7.815
Trans-National Bank Ltd	2013	5.465	6.768	6.753	8.768	0.027	0.787	0.355	6.945
	2014	5.588	6.883	6.753	8.962	0.017	0.486	0.340	6.985
	2015	5.184	8.201	6.753	8.801	0.013	0.392	0.305	7.010
	2016	5.152	8.146	6.753	8.772	0.016	0.280	0.340	7.019

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2017	5.261	8.251	6.753	8.886	0.011	0.382	0.370	7.016
UBA Kenya Bank Ltd	2013	5.229	8.238	6.791	8.341	0.040	0.283	0.420	7.290
	2014	5.289	8.266	6.620	8.345	0.042	0.271	0.380	8.043
	2015	5.247	8.139	6.620	8.362	0.023	0.267	0.230	8.138
	2016	5.303	8.154	6.620	8.420	0.041	0.236	0.202	8.170
	2017	5.331	8.163	6.620	8.433	0.041	0.241	0.368	8.215
Victoria Commercial Bank Ltd	2013	5.330	8.167	6.753	8.388	0.055	0.526	0.331	7.014
	2014	5.348	8.230	6.753	8.419	0.049	0.530	0.308	7.135
	2015	5.314	6.919	6.753	8.485	0.041	0.537	0.280	7.237

COMPANY	Year	Mobile banking	Internet banking	Agency banking	ATMs	ROA	Capital adequacy	Liquidity	Bank Size
	2016	5.419	6.686	6.753	8.744	0.049	0.452	0.211	7.301
	2017	4.960	9.506	6.753	9.513	0.038	0.728	0.202	7.350