

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

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DECLARATON

This is my research project, and it has never been submitted for an award at another university.

Signature :  Date: 17/08/2021

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D61/11025/2018

This research project was completed by a student under my direction and submitted to the University of Nairobi for evaluation.

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ABSTARCT

The study intended to investigate the link between electronic banking and the financial performance of commercial banks. The data came from annual reports from the 41 commercial banks that were accessible. This was obtained from the Central Bank's websites and the individual Bank's websites as published there. The study collected data on the number of transactions done through ATMs to represent ATM banking. E-banking was measured by the numbers of transactions through online platforms and the value of transactions through online banking platforms. The research also used mobile banking measures such as the number of transactions through mobile banking. Return on Assets, on the other hand, was used to measure financial performance (ROA). According to correlation research, ATM banking, mobile banking, and internet banking all show a favorable link with commercial bank financial success in Kenya. However, the regression results demonstrated that ATM and online banking have a positive and significant impact on commercial banks' financial performance. The results, Mobile banking, on the other hand, has been determined to have a negative and considerable influence on Kenyan commercial banks' financial performance. Based on the findings, the research recommends that banks boost their use of electronic banking, notably ATM banking and internet banking. The research also advises Kenya's central bank, as the country's primary regulator and supervisor of commercial banks, to develop effective policies governing the use of electronic banking by Kenya's commercial banks.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In the current society, the banking sector is a vital necessity as which significantly contributes to the financial development and money marketing in an advanced country. In a stable monetary system, banking activities hold a remarkable role by enhancing financial resources for industrial activities, which generate employment opportunities and overall development of the country (College of Banking 2020). Banks' financial performance monitors the analysis and the outcomes of a firm's guidelines, performance, productivity, and usefulness in financial terms (Verma, 2017). Nowadays banking institution is updating and increasing its influence in diverse financial measures. Electronic banking has transformed the financial industry through various inventions of present technology. To survive in the banking sector's competitive field, commercial banks are seeking better service opportunities to give their customer (Stijns & Revoltella, 2016).

To link innovation and performance, several theories have been proposed. The technology adoption model, innovation diffusion theory, and Schumpeter theory of innovation were all used in this study. Davis (1986) created the technology acceptance paradigm, which claims that two fundamental variables influence an individual's adoption of information systems: perceived usefulness (PU) and perceived ease of use (PEU) (PEOU). Rogers developed innovation diffusion theory in 1962, whereby he attempted to how a new idea, or product eventually diffuses and is slowly adopted into the society over time. Further, the Schumpeter innovation theory was proposed by Schumpeter (1934), who argued that very new entrepreneurs come up with new opportunities to make new profits.

E-banking is a modernization of traditional banking criteria that has decreased transaction costs, increased payment efficiency, and improved the banker-customer connection (Ogare 2013). "Electronic banking has long been recognized to play an important role in economic development based on its ability to create liquidity in the economy through financial intermediation between savers and borrowers. It also offers financial services and products that accelerate the settlement of transactions and, in the process, reduce cash intensity in the financial system, encourage banking culture, and catalysis economic growth" (Al-Gahtani, 2001). E- banking adopts information technology to create and process bank information in regard to their operations and their customers

more effectively and efficiently (Bony & Kabir, 2013).

1.1.1 Electronic Banking

Electronic banking, according to Kiragu (2017), is the efficient, smooth, and automated delivery of both modern and traditional banking services over electrical communication channels. Electronic banking, according to Jain (2013), is a sort of banking in which funds are transferred via electronic signals rather than cash, checks, or other types of paper papers. Customers utilize these systems to access their accounts, conduct transactions, and acquire information via networks, such as the Internet. There are two types of networks: private and public. Therefore, electronic banking is the general term that describes all the processes involved in such transactions with no need of visiting the financial institution physically (Kiragu 2017).

Electronic banking depends on sophisticated computer softwares and applications that operate on telephone lines. These computer systems do the recording of transfers and possession of funds, and they regulate the means through which clients and commercial organizations use to access money (Ogare 2013). The common access code (or identification) method is a code, such as a personal identification number (PIN). Electronic banking permits clients to do their transactions at any time, irrespective of whether it is or not the bank's operating hours. Clients can do their transactions from anywhere provided their Internet access. Online banking gives services like bank statements, payment of electronic bills, transferring funds between customers or from the checking to savings account and vice versa, applications of loans and transactions, and investments sales, all can be done at any geographical point at any time (Marien, 2009).

Electronic banking can be in the form of ATM banking, internet banking and mobile banking. An ATM is a telecommunication device that has been computerized and that gives access to financial transaction to customers of a financial institution in a public space and without need for a human cashier or teller (Bharath, Dhananjaya, Anoop, & Raghavendra, 2012). An ATM system according to Mwatsika, (2016) provides a link of financial institutions to their retail banking customers who are able to conduct several routine banking transactions. The transactions can be deposits, withdrawals, cash transfers and cash payments. Internet banking is defined as the access to bank accounts through internet enabled mobile phones, computers and web browser (Al-Weshah, 2013). A number of services are linked to internet banking which include; cash transfer and payments, viewing downloading and printing of statements, balance checking, account detail

viewing and account customization (Salimon, Yusoff, & Abdullateef, 2014). Finally, according to Odera (2013) mobile banking as accessing banking services using mobile devices or a mobile terminal. Mobile banking involves a bank, a telecommunication company and a mobile device where the mobile user who is the customer is connected to a mobile network through a SIM card. The advantages of adopting mobile banking over branch banking has been that customers can access banking transactions at any place and at any time. More so, mobile banking provides customers with the ability to control their money and also low cost of transactions and also there is no need for internet connection.

1.1.2 Financial Performance

Naz, Ijaz, and Naqvi (2016) define financial performance as the outcomes of a business sector that represent the sector's overall financial health over a given period of time. It is a metric for determining how well a company's resources are being used to maximize shareholder wealth and profitability. A subjective amount of measure used to examine how a company uses its assets in connection to its primary business model and revenue is called financial performance evaluation. Net operating income (NOI), earnings before interest and taxes (EBIT), profit after taxes (PAT), and net asset value (NAV) are also included. The financial performance is used to measure and evaluate how well banks use their resources and other assets to create revenues, which explains a company's overall monetary state for a certain period and can be used in comparing industries with each other. Financial performance and its purpose to a greater percentage influence the determination of the business' profitability and stability (Pinto et al., 2017).

Financial success can be measured in a variety of ways, but all of them should be used together. Return on Asset, Return on Equity, and Net Interest Margin (Murthy & Sree, 2003), as well as Return on Debt, are the three most common ratios used to quantify profitability. The return on assets (ROA) is a key metric that measures a bank's success based on how well its management controls and manages its assets to produce revenue. It also points to the effectiveness of a company's management in generating a net pay from all organizations' assets (Athanasoglou, Delis & Staikouras, 2006). Wong (2004) connotes that higher ROA reveals that an organization is efficiently utilizing its resources. Return on Asset is the measure of financial performance that will be adopted for this study as it is mostly used by commercial banks in Kenya to assess the financial performance of their institutions. The data for the same is therefore readily available for use in the

study.

1.1.3 E-banking and Financial Performance

Technology has been viewed as one of the major factors that act as driving forces for a firm's financial performance success (Mugodo, 2016). E-banking brings about improvement in the financial performance of firms as it comes about with a reduction in the transaction costs and improvement of the efficiency of payment, and other financial services as well as improving on the bank customer relationship (Ogare, 2013). Electronic banking works as a financial intermediation between savers and borrowers thus leading to improved financial performance of banks. Electronic banking also encourages banking culture and also reduces cash intensity as it offers services and products that accelerate settlement of transactions in the financial sector (Al- Gahtani, 2001).

Research done by Ogare (2013), Asia (2015), Kiragu (2017), and Ogutu and Fatoki (2019) established that E-banking and the performance of a bank relate significantly. According to Siddik et al. (2016) e-banking begins to give positive contributions to banks' Return on Equity with a time delay of two years, however during the first year it was implemented, it yielded negative effects. According to Okombo (2015), access to the bank account at client's comfort, accessing the bank account during non-working hours, various interlinking products with electronic banking, access without the physical branch, and decrease of banking costs are some of the ways through which the financial performance is positively impacted by e-banking.

The implementation of electronic banking like the Internet banking, mobile banking, and ATM directly impacts financial institutions' financial Performance (Gitau, 2011). These platforms have low costs which increase the number of customers subscribing to the channels and the financial institutes as customers (Mwangi, 2014). This affects the financial institutions having a big client base that use their revenue through the monthly account conservation fees and growing customer payments hence lower prices when attracting capital for loaning purposes (Ngugi, 2012).

1.1.4 Commercial Banks in Kenya

The constitution mandates the Central Bank of Kenya (CBK) to supervise Kenyan commercial banks. The Central Bank adopted monetary policies with the goal of maintaining price stability. Kenya has 41 licensed banks, according to the CBK directory of commercial banks in Kenya.

There are 27 local and 14 international commercial banks with branches and bank agencies all around the country (Central Bank of Kenya, 2020). Due to the establishment of more and more commercial banks in Kenya, competition in the banking business has increased. Commercial banks have been pushed to operate more effectively in order to survive in this competitive market, according to Kisaka and Wafubwa (2014).

Banks have had to adapt to technologically driven service delivery channels with the continued global technological advancements. Electronic banking continues to propagate Kenya's digital banking ecosystem to cover money transfer and credit and savings, payments for goods and services, and e-commerce through linkages with various financial and non- financial institutions. The growth of electronic banking has been witnessed in urban areas and countryside areas. This largely attributes to the convenience and affordability of financial services offered through MFS (CBK 2019).

1.2 Research Problem

Commercial banks are critical components of any economy's financial system. Commercial banks help enhance the financial resources for industrial activities, which in turn generate employment and contribute to the overall development of economy in a country. Hence, the good financial performance of a profitable bank is useful and helps in analyzing the Bank's policies' efficiency and effectiveness (Pinto et al. 2017). The emergence of financial technology has seen many commercial banks adopt e-banking in order to improve their financial stability (Pierri, & Timmer, 2020). Electronic banking has the advantages of allowing customers to access their accounts any time anywhere which has helped expand the customer base for commercial banks. More so e-banking helps reduce the number of human cashers and tellers hence reducing the banks expenses (Daniela, Simona, & Dragos, 2010).

While the main aim of any commercial bank is to generate profit and continue improving in their financial performance, this is not so for many Kenyan commercial banks. Some banks continue to lag in their contribution to the overall profitability of banks in Kenya (CBK 2019). Most commercial banks continue to register below average in terms of the Return on Assets. The banking sector's profitability declined by 29.5 percent in 2020, according to the Central Bank of Kenya (2020), from Ksh.159.1 billion in December 2019 to Ksh.112.1 billion in December 2020. More over commercial banks face a lot of challenges that hamper their performance. Cases of

ATM card skimming have cost most commercial banks leading to losses. More so the high cost of transactions through the use of banking hall methods and high competition also hamper the performances of commercial banks (Muriithi, & Louw, 2017). This could be harnessed by the use of electronic banking which has so much advantages that could lead to improvement on the financial performance of banks. More over most banks have targeted electronic banking to enhance their performance but the performance is still low (Pinto et al., 2017). This has necessitated a review of how electronic banking affects bank financial performance and the development of methods to improve those performances. As a result, the purpose of this research was to see how electronic banking affected bank financial performance in Kenya.

Several studies have attempted to determine the impact of e-banking on bank monetary performance. However, this area has not been exhausted in terms of the methodologies used and the conceptualization. Some of these studies include the study by Asia (2015), who wanted to examine the contribution of E-banking towards the performance of banking institutions in Rwanda. This study, however, was done in Rwanda but not in Kenya and the differences in the internal operations of the two countries in the banking sector would not be the same hence the need to investigate the same in Kenya. Similarly, Ogare (2013) investigated the impact of electronic banking on commercial banks' financial performance in Kenya. However, the study solely looked at profitability as a metric for financial performance, leaving out other factors. Kiragu (2017) also investigated the impact of electronic banking on the financial performance of Kenyan banks. However, the study failed to conceptualize electronic banking but assessed it in general while this study will see to assess the individual effect of each type of electronic banking. Ogutu and Fatoki (2019) have looked at how automated banking affects financial performance. The study however, used money transacted under each form of electronic banking leaving out other measures which this study will include. Githae, Muriuki, and Njeru (2018), on the other hand, sought to find out the influence among deposit- taking micro finance institutions. However, the study was conducted among deposit- taking micro finance institutions whose operations are different from those of commercial banks hence the need to investigate the relationship among commercial banks.

1.3 Research Objective

To examine the impact of electronic banking on Kenyan commercial banks' financial performance.

1.4 Value of the Study

The study would be of advantage to several parties, such as stakeholders in the finance sector and other scholars. Therefore, the study will benefit the following;

1.4.1 Government

The findings of this study will be used by the Kenya Bankers Association and CBK to assist the government. The findings of this study will aid the Kenyan Central Bank in developing rules to oversee commercial banks' use of electronic banking applications. The conclusions of the study, on the other hand, will benefit the Kenya Bankers Association in counseling commercial banks on how to enhance their financial performance.

1.4.2 Commercial Banks Management

Commercial bank management will also find the study findings useful since they will provide recommendations on the way forward for commercial banks regarding electronic banking and financial performance. They will therefore use the recommendations to enhance their performance if they implement them. They also will further comprehend the influence of automated banking on financial performance and hence act accordingly.

1.4.3 Scholars

The research will be valuable to scholars who will refer to it in their literature review. As a result, they will be able to compare and contrast their findings with those of this research. Future studies will be suggested by the study for future scholars who aspire to advance in this discipline. Furthermore, the research will contribute to existing theoretical discussions on the relationship between electronic banking and commercial bank financial performance, which will be beneficial to future researchers.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter constitutes of the literature review of various past articles with similar or close objectives to those of this study. The chapter contains a section of theoretical review and empirical review. It then summarizes the literature reviewed and then knowledge gap.

2.2 Review of Theory

This section examines a number of hypotheses related to the technological acceptance model and Schumpeter's innovation theory. The technological accept model and diffusion theory of innovation, as well as Schumpeter's theory of invention, were used in the research.

2.2.1 Model for Technology Acceptance

The Theory of Reasoned Action provided the foundation for the Technology Acceptance paradigm (Fishbein et al., 1980). It asserts that information system acceptability is influenced by two factors: perceived ease of use (PU) and perceived usefulness (PU). According to Davis, a high-performance information system is pointless unless the user adapts to and accepts the available technology. Therefore, there is a need to get the reasons behind users' acceptance and rejection of systems to enable future explanation and modernization of the methods.

According to Davis (1993), Saade and Bahli (2005), Nair and Das (2011), acceptance and use of new technology by individuals is commonly due to its ease of use which means the new technology requires little effort usage. PEU is the degree of a person's belief that usage of one system requires minimum effort (Sun et al., 2009). Studies have confirmed that when people believe that establishing a certain technology is easy to use, they will adapt to its working (Davis, 1989; Liang, You Liu et al., 2010).

Acceptance of technology is also affected by perceived usefulness. Perceived usefulness is confirmed when a user believes that the technology improves the job (Tarhini et al., 2015). PU is "how much an individual believes that a certain system assures them of job performance." (Sun et al., 2009). Also, it relates to the belief that technology improves the performance of an individual (Liang, You Liu et al., 2010). TAM and its external models from other research confirm that

PU enhances an individual's aim in non-option and voluntary situations (Verkasalo López-Nicolás, et al, 2010).

However, the model has been criticized by writers such as Bashange (2015) who argue that technology acceptance model has been used by most literature as a dependent variable rather than as a means through which the factors that influence behavior are determined. Javid, Okamura, Nakamura and Wang (2013) also argue that the model fails to consider other external factors such as education and age which would also influence the willingness to adopt and accept a technology. Hence the model has been considered inadequate as a nexus between technology and its adoption and use (Ajibade, 2018).

This theory is applied to explain the adoption of online financial transactions services by banks in Kenya. The banks and their customers will seem to adopt e-banking they deem it both simple to operate and effective. Thus, if together with their customers they perceive that e-banking will enhance their performance when performing banking services and is free of effort, they will adopt it. This determines the effect of e-banking on how the Bank performs financially.

2.2.2 Innovation Diffusion Theory

Rogers (1962) developed Innovation Diffusion theory. It is an old theory in social science, which came from communication to account for how something, either a product or opinion spreads through people and systems. Finally, the opinion or product or behavior reaches everyone, and they adopt it. Adoption implies that a person adapts to the new changes; for instance, they buy a product, begin to behave differently, etc. The easiest way to adopt things is to view the idea or behavior, or product as an innovation; therefore, diffusion happens.

This diffusion does not happen consequently, but it takes time; some people adapt faster than others, this makes it a process. Research has shown that individuals who adopt innovations faster have different personalities from those that adapt slowly. During the promotion of innovation to a target audience, one needs to get their personalities to steer or deter them from adopting. Five adopter categories have been established. Although most of the general population are in the middle class category, it is necessary to understand the target audience's characteristics. There are various approaches to impress the different categories of people (Rogers, 1962).

Innovators are the first people to develop, test, and employ an instrument or device. They have a particular interest in new ideas. They are risk-takers and are commonly the first to innovate; appealing to this population requires little effort. They act as representatives of the opinion leaders, enjoy these leadership duties, and adapt to change opportunities. There is awareness of the need to change amongst these people, and they are at ease when adapting these opinions. Approaches to impress this population are working manuals and information papers on the implementation. There is no need for information when convincing them. The category of Early Majority are seldom the first people to adopt new innovations, but they always adopt them before most people. Typically, they need to be shown evidence of the innovation's work, so they can adopt them. Therefore, the best strategy to impress this group of people is just to give them proof that the innovation is actually effective and successful.

The group of the Late Majority constitutes of skeptical people who are not open to change and will only adopt new innovations after they are already adopted by majority of the population. The best way to deal with these people is by giving them the information and details of the people who employed the innovation and succeeded. Finally, there is the group of laggards who have a deep binding to their cultures and very conservative. They have doubts about change and are the hardest lot to convince. Approaches to convince them include giving them facts and numbers, appeals of fear, and pressure from people from the other categories of adopters (Rogers, 1962).

Stages from the adoption of innovation to the completion of diffusion include general education of the aim of the innovation, deciding whether to adopt or reject, first attempt to use the innovation for testing and continuous adoption of the innovation. The adoption of an innovation is affected by five main factors. These are: Relativity Advantage, the degree to which an innovation is considered an upgrade of the product or device it is set to replace. Compatibility, which implies the consistency of the innovation and its compatibility to the needs, wants of its potential adopters. Complexity is the difficulty of use and understanding innovation. Then there is the degree to which testing and experimenting can be done on the innovation, also, the extent to which the innovation gives viable results (Rogers, 1962).

In this study, the theory is useful because it explains how e-banking as an invention would spread across commercial banks and clients. This will be determined by the category of adoption to which

the banks and customers belong. Five factors that influence people to adapt and innovate are; relative advantage, compatibility, complexity, observability, and triability. They determine how commercial banks together with their customers change towards the use of online banking.

2.2.3 Schumpeter Theory of Innovation

Schumpeter stated that anyone who wished to attain profit, had no choice than to be innovative. He argued that that was the only way people could achieve the various use of supplies of productive means in the economic system (Schumpeter & Redvers, 1934). Schumpeter affirmed that innovation is a critical driver of competition and economic dynamics (Hanusch & Pyka, 2007; Porter & Stern 1999). He also said that economic change relies on innovated projects, which are usually a product what he termed as 'creative destruction'. Schumpeter talked about democracy, socialism and Capitalism. According to Schumpeter, innovation is an industrial process that is responsible for economic growth by destroying the old structure and coming up with a new one.

According to Pol and Carrol, (2006), Schumpeter established that the most vital dimension of economic change was innovation. He explained that through innovation, people could engage in entrepreneurial activities and dominate the market, with the power of their innovative and unique products, (Carayannis, 2013). Thus, he was determined to prove that innovative products generated market power and yielded better entrepreneurial results compared to the invisible hand and price competition (Nakamura, 2000). He disputed with the ideology that technological innovation often forms short-term monopolies which causes abnormalities in profit making. These abnormalities can be challenged by the banks' competitors and imitators. According to him, the short-term monopolies were extremely vital and they indicated that a product had run old and companies needed to innovate and develop new products (Pol & Carroll, 2006).

Schumpeter (1934) argued new profitable opportunities are created by entrepreneurs who are innovative. These innovations bring in high opportunities once they enter into the market and make the firms' competitors to imitate the same product. Schumpeter (1934) emphasizes the entrepreneurship roles in finding profitable and better opportunities that will ensure cash flow. This theory attempts to give the difference between the banks who invest in new opportunities and the new environments for entrepreneurs that give profit. When financial innovations invest in new ventures they enable a firm's growth, this implies that it has progressive duties. Banks have always seized these venturing opportunities for future growth in business. Most of them prefer

innovations based on the new technology. These innovations and also their upgrades come from sustaining investment on all kinds of assets, physical and intangible (Masika et al., 2015).

This philosophy is applicable in this research as it clarifies that innovation is a route to profitability. Therefore, it will be used to link online banking as an invention to the how the commercial banks in Kenya perform financially. E-banking is an innovative opportunity for new profits; hence, it will mean new profits and improved financial performance if adopted by commercial banks.

2.3 Empirical Review

Ogare (2013) looked into the impact of online banking on the performance of Kenyan banks. Electronic banking has a good and affirmative impact on Kenyan banks' total profitability, according to the study's conclusions. The previous study, on the other hand, only looked at bank financial performance, but this study will only look at financial performance.

In their study, Valahzaghari and Bilandi (2014) investigated the effect of electronic devices on how Iranian banks gain profits and by what extent are they shared in market. Examples of these devices are; point of sale terminals, automated telling machines and pin pad. The population sampled for the study was 16 banks, five governmental and eleven privates, since 2007 to 2012. By use of regression approaches, the study found out that all the devices had no significant effect on market share, pin pad influenced the return of assets and the rest had no influence on profitability. The study however was on electronic devices while not all electronic devices could represent electronic banking.

In regard to banks of Ghana, Addae-Korankye (2014) did a research to determine how online bank services influence the services given to customers and profit gained. Ten banks and 250 clients were randomly sampled and selected in the city of Accra. The findings of this study were that technology has improved the attendance to customers and the profits that banks are able to gain. Nevertheless, technology and the online banking services faced a number of shortcomings. The study related online banking with services offered to customers and not financial performance.

Mawutor (2014) did a study at a Ghana-based bank, to check its productivity as brought about by the online banking services. This study issued 150 questionnaires to clients in the Agricultural Development Bank to get statistics about the online banking, this is a quantitative methodology.

After testing the hypothesis, the research confirmed that the profits increased since the implementation of online banking services, although a drop was recorded in the next year after its introduction, but after then a general increase in profits is noticeable. The study was mainly on banks productivity and not financial performance.

Juma (2014) looked into the impact of internet banking on the overall performance of a standard chartered bank. Six survey participants were recruited using basic random sampling using a non-experimental technique. Data was collected through questionnaires, which was then analyzed. Standard chartered Bank employs a number of electronic payment alternatives, including Internet banking, credit cards and debit prepaid cards, and electronic fund transfer cards, according to the survey's findings. However, the study only looked at one bank, leaving out other commercial banks that operate differently and hence have possibly different consequences.

Okombo (2015) also looked into the influence of online banking on the functioning of MFIs that take deposit in Kisii. The main aim was to study how low costs of transaction affected the performance of the MFIs. The research implemented the questionnaires and descriptive research design for data collection, also used SPSS and census sampling approach. Low costs of transacting affects MFIs in the following ways; customers can access the bank services whenever they wish and during off-work hours and, there is no need for the customer to be physical present at the bank premises. In conclusion when costs of transaction are decreased, the performance of microfinance institution significantly increases. However, the study was conducted among MFIs hence the need to do the same among commercial banks.

Ngango, Mbabazize, and Shukla (2015) employed both quantitative and qualitative methods to assess online banking in Rwanda's bank. It further adopted a descriptive research design. To adhere to the two data collection methods, documentary analysis and questionnaire techniques were used to collect data. The study established that e-banking systems such as ATMs, direct payment, conversion by electronic checks, mobile and phone banking, and transactions have a great influence on the functioning of banking institutions. The study found that the electronic banking systems gained more profits, reduced bank prices of procedures and improved bank assets and banks effectiveness. While the study was conducted among banks in Rwanda the results may not be applicable among Kenyan banks hence the need for this study.

Wafula and Kombe (2015) investigated the influence of online banking on commercial bank monetary performance, focusing on KCB. Their research was conducted among staff personnel of KCB in Mombasa, where data collection happened through use of a questionnaire and analysis through descriptive statistics and by use of a descriptive research method. Conclusions revealed that technology adoption leads to improved quality and time savings rather than cost savings. The study however failed to investigate this among other commercial banks whose effect may be different owing to the differences in the internal structures of the various banks.

The impact of Kenyan commercial banks' E-banking practices on their performance was investigated by Kagendo (2015). The probe involved a total of 43 Kenyan commercial banks. Data for this inquiry was collected using structured questionnaires and descriptive statistics, which were then analyzed using descriptive statistics. The data for this inquiry was evaluated using descriptive statistics. Correlation, regression analysis, ANOVA, and Chi Square are examples of inferential statistics. According to the findings, e-banking infrastructure plan has a substantial positive correlation with bank performance. The study however did not investigate the various types of electronic banking. In an attempt to analyze bank innovations and performance among banks in Kenya Gichungu and Oloko (2015) used data for mobile banking, ATM banking, online banking, and agency banking from 2009 to 2011. All of Kenya's 43 commercial banks were included in the study's audience. The findings revealed that the relationship's direction was favorable and that the relationship was significant.

Mateka, et al. (2016) did an investigation on how banking through the Internet influences listed banks performance in Kenya. This was achieved through a descriptive design and by use of all

employees of banks listed on NSE as the population. The respondents were the employees in the listed banks were sampled through a simple random sampling method. The data was examined using frequencies, percentages, and inferential statistics, such as regression and correlation analysis, after the respondents completed questionnaires. The research's findings proved that Internet financial transactions positively affects financial performance measures of commercial banks such as bank incomes, loan books, operating costs and customer deposits. However, the study focused on only internet banking hence the need to investigate other forms of electronic banking.

Solomon and Worku (2016) aimed at examining the roles of online banking on the financial functioning of profitable banks in Ethiopia. The case study used secondary data employed a purposive sampling technique to select ten Ethiopian operating banks, since 2013 to 2015. Meihami, Varmaghani (2013) also performed a similar research on the online banking and its components like debit and credit cards etc. The independent variables were; values and prices of; ATMs, POS, debit cards, number of ATMs, POS and their market shares. Also, there was the implementation of E-view 8 application and panel least square regression that showed all the independent variables used increased the productivity of the bank. Also, results indicated that increasing the number of Automated Machines, Point of sales was directly proportional to the performance of the banks. Several bank institutes indicated that market sharing increased scale operations hence good profit gains. Although the study was conducted among bans the results may not be generalizable to Kenyan bans as the structures of the bans may differ between the countries and the effect may not be similar.

Siddik et al. (2016) conducted a study among Bangladeshi banks to see how online banking affects their performance. The information for the study was gathered from 13 banks between 2003 and 2013. Return on assets, return on equity, and net interest margin were used to evaluate bank performance. Even if the effect was negative during the first year of adoption, the analysis revealed that after a two-year lag, online banking begins to positively contribute to bank earnings. However, the findings may not be applicable to Kenyan commercial banks.

Harelimana (2017) assessed how online banking has affected the performance of Unguka Bank. The author used both interview guide and questionnaires for collecting data. The study attained its aims by handling the secondary data. They also issued questionnaires to all the personnel in the

bank who were willing to participate, including the employees and managers. The findings of the study showed that the online banking system result in an overall positive impact on the general performance of the bank. There's need however to be specific on the effect on financial performance.

Vekya (2017) investigated the impact of online banking on Kenyan commercial banks' profitability. This study used a descriptive research approach to collect data from secondary sources, including many Central Bank of Kenya publications, then analyzed the data using SPSS. Research used 43 banks that operated as of 2014 as a sample. The study used percentages, trends, means and correlation and regression results for statistics purposes. Results showed that the number of transactions done on ATMs are directly proportional to the profits made by the bank, the same case applies the proportionality found in the number of POS transactions and the bank profits. Profitability of the commercial banks in this study was measured only in terms of ROE leaving out other measures such as ROA which this study incorporates.

With the help of data obtained form 60 bank employees who responded to questions form a questionnaire and also interviews Kiragu (2017) looked into how E-banking influences Kenyan bank performance. The 60 employees were sampled form a total of 100 employees. Electronic banking has enhanced the profitability and range of financial services, but it has also increased banking costs, according to the study. There's however need to collect secondary data form the publications which may provide different results.

Ali (2018) did another study, this time concentrating on Barclays Bank, to see how online banking affects the overall financial performance of Kenyan commercial banks. The goal of the study was to see how electronic banking influences commercial bank profitability and financial performance, as well as how electronic banking risk management measures affect commercial bank financial performance. The study's population was employees of Barclays Bank, and a sample of 50 respondents, including bank managers, departmental heads, and subordinate staff, were sampled out through stratified sampling. The research employed questionnaires to collect data, and adopted both the descriptive and regression techniques for data analysis. The results of the study proved that accessibility, fees, and commission, and risks associated with online banking are significantly affecting the profitability of commercial banks. Similarly, he established that increasing the privacy and security of online banking, as well as curbing threats related to this type of banking has

resulted in positive impact. Commissions and fees imposed through mobile banking were also found to affect banks' financial performance. However, the use of primary data in the study was not exhaustive and hence secondary data can be used to fill the knowledge gap.

Njoroge and Mugambi (2018) investigated the influence of internet banking on the economic performance of banks, with a focus on Equity Bank. A descriptive research method, was employed. The research targeted the staff from Equity bank branches located in the central business district of Nairobi. From this, a sample of 100 respondents was drawn and data collected using a questionnaire. Regression analysis and also descriptive investigation was used in data analysis. Results of the research included; electronic banking makes simple services become easy to access, ensures reduction of costs of transactions and enables financial institutes to reach more customers hence a larger market. There's however the need to incorporate secondary data which may provide more details on the relationship.

The methodology adopted by Ogutu and Fatoki (2019) to look into the relationship that exist between electronic banking and financial performance of bans necessitated the use of panel data from the Central Bank of Kenya for 11 commercial banks. The analysis of the data was conducted and descriptive as well as inferential results reported. The study however, used money transacted under each form of electronic banking leaving out other measures which this study will include.

Mueni (2019) sought to know how electronic banking affected Kenyan commercial banks' financial performance. The study's goals were to first assess the prevalence of Internet, ATM, mobile, debit, and credit cards among commercial banks, and then to determine their impact on commercial banks' financial performance. Secondary data from 34 commercial banks was collected and used in the study, which covered the years 2011 to 2015. After that, the data was evaluated using descriptive and inferential analysis approaches. Finally, the findings of the study revealed that electronic banking had a favorable impact on commercial banks' financial performance.

Noah (2019) discovered a positive association between Internet banking and the financial performance of tier one banks in Kenya after analyzing data received from personnel of tier one banks in Kenya via semi structured questionnaires. The study's approach was descriptive in nature, with descriptive and inferential data analysis techniques employed. Other forms of electronic banking will be included in this analysis that were not overstated in the previous study.

Further, Jepchumba and Simiyu (2019) conducted a study to analyze how adoption of e-banking in profitable banks in Kenya has affected its performance in the finance sector, using Nairobi County as a case. The design that the study implemented was descriptive. Further, collection of data was done in all 41 banks located in Nairobi County. All the general managers and credit managers were sampled through a census, and a filled-out questionnaire for acquiring primary data, and annual reports for collecting secondary data. The study established that electronic banking impacted the financial performance of commercial banks positively. The conceptualization of e-banking in the study however differs from the conceptualization in this study.

Nduta and Wanjira (2019) found that the financial performance of commercial banks in Kenya was affected positively by agency banking, mobile banking, ATM use, and internet. The relationship among the variables was also found to be statistically significant. The findings of the study were achieved through the analysis of data collected from 100 managers of banks of whom 40 were senior managers and 60 operations managers who responded to questionnaires. The research strategy used in this study was descriptive. The study reported the descriptive statistics, and also the results for correlation, and regression analysis.

2.4 Summary of Literature Review and Knowledge Gap

A review of theories has already been conducted. The three theories are technology acceptance model theory, Schumpeter theory of innovation and innovation diffusion theory. A review of empirical literature was also conducted, which revealed several studies conducted in electronic banking and financial performance. Most have shown that online banking influences financial performance positively, while others showed a negative relationship.

However, the above studies have presented knowledge gaps in the literature that need to be addressed. While these studies have been conducted, many of them have not been conducted in Kenya hence presenting geographical gaps. Furthermore, for other studies, contextual gaps have been left as they have been conducted in sectors other than commercial banks. More so, the concepts in the identified studies have differed as some have used different performance measures.

Specifically, conceptual gaps were identified in the studies where most studies only focused on the general performance of banks and not specific on financial performance. While others related online banking with services offered to customers and not financial performance and others banks

productivity and not financial performance. Other studies focused on only one form of electronic banking hence the need to investigate other forms of electronic banking. As a result, the research were unable to effectively explain the relationship between various forms of electronic banking and commercial bank financial performance. In terms of the context some studies were conducted on only one bank leaving out other commercial banks whose operations are different and hence could have different effects. Other studies were conducted among MFIs hence the need to do the same among commercial banks. The knowledge gaps are explained by the differences in internal operations between MFIs and commercial banks, thus the findings cannot be applied to commercial banks. The studies also revealed geographical gaps, such as those done among Rwandan banks, the results of which may not be applicable to Kenyan banks, necessitating the necessity for this research. As a result, there has been a knowledge gap in terms of the influence of e-banking on commercial bank performance in Kenya. As a result, in order to participate to this study, secondary data will be collected from all commercial banks in Kenya.

2.5 Conceptual Framework

Figure 2.1 shows the conceptual framework for the study.

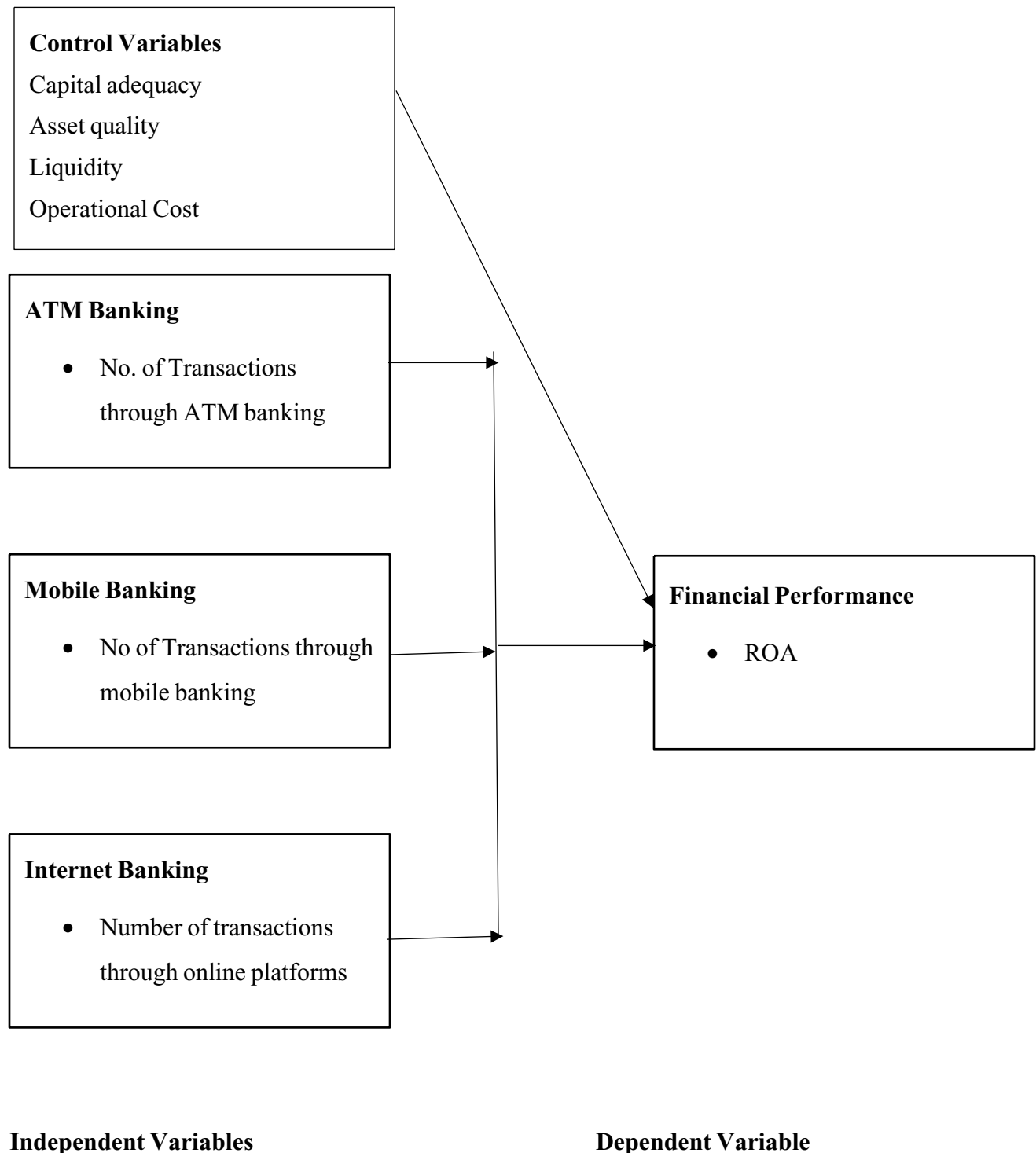


Figure 2.1: Conceptual Framework

In this research, E-banking will be measured by ATM banking measures, including the number of ATMs, number of ATM debit cards, number of POS machines, and the number of ATM transactions. Mobile banking measures will include: Number of active agents, total registered mobile money accounts, the volume of agent cash in cash out, and the value of total agent cash in cash out. Furthermore, Internet banking will be determined by the number of transactions through online platforms and the value of transactions.

Financial performance is a concept which describes how efficiently banks use their assets and resources to gain profit and revenue that are key in revealing the financial status of banks on a stated time. It is why industries can be compared by contrasting their financial performance over a stated period of time, since it explains not only the profitability, but also the stability of a business. The financial performance will be measured through ROA. The control variables for the study will be capital adequacy, asset quality, liquidity operational cost.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The study's third chapter detailed the various data collection strategies used in the investigation. The research design, target population, sample design, and data collection method are all included. The chapter also includes an explanation of the data analysis procedures as well as the study's ethical guidelines.

3.2 Research Design

Labaree (2013) defined a research design as a tool which depicts the manner in which a research is to be conducted. It is the entire plan that a researcher decides to adopt to put together all the study elements and ensure that the study problem is addressed effectively. It constitutes collection of data, data measurements, and method of analyzing data. This study used a descriptive research design, which involves the collection of data as it is without influencing it in any way. It helps in answering the questions who? What? and how without answering the why. Therefore, this design was applicable in this study since the researcher did not intend to affect the responses in any way but will collect the data and report it as it is.

3.3 Target Population

The individuals of the group that the researcher desires to include in their study are referred to as the target population (Asiamah, Mensah & Oteng-Abayie, 2017). The study's target demographic was all Kenyan commercial banks. As of 2020, Kenya had forty-one commercial banks registered, as shown in Appendix III (Central Bank of Kenya, 2020).

3.4 Data Collection methods

Annual reports of the 41 commercial banks available provided the data. This was obtained from the Central Bank's websites and the individual Bank's websites as published there. The study collected data on the number of ATM (debit) cards from the POS machines and the number of transactions done through ATMs to represent ATM banking. On mobile banking, the study collected data on the number of actively participating agents, registered bank accounts, volume of agent withdrawals and deposits, and the value of total withdrawals and deposits. On the other

hand, data on Internet banking was collected for the number of transactions through online banking platforms and the total value of transactions through online banking platforms. For financial performance, the study will collect data concerning assets' returns and equity returns.

3.5 Data Analysis

The research was conducted data analysis to find out how e-banking variables relate to financial performance measures. ATM banking criteria, such as the number of ATMs, ATM debit cards, POS terminals, and ATM transactions, were used to assess e-banking. Mobile banking metrics such as the number of active agents, total number of registered mobile money accounts, quantity of agent cash in cash out, and total agent cash in cash out value were also employed in the study. Furthermore, Internet banking measured e-banking by counting the number of transactions made on online platforms and the value of those transactions. Return on Assets, on the other hand, was used to assess financial performance (ROA). The following model was estimated.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where:

β_1 β_2 and β_3 are coefficients

Y = Financial Performance (Measured as ROA)

X₁ = ATM banking which is (Measured as transactions through ATM banking)

X₂ = Mobile banking which is (Measured as the transactions through mobile banking)

X₃ = Internet banking (Measured as number of transactions through online platforms and the value of transactions through online banking platforms).

The statistical significance was measured at a 0.05 significance level.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The outcomes of the data analysis are presented in this chapter. The descriptive statistics that were utilized to summarize the data were first presented in this chapter. The findings of the correlation and regression analyses were then reported.

4.2 Descriptive Statistics

Table 4.1 shows the results of the descriptive research.

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Dev.
ROA	41	-4.5	4.7	1.81951	2.010873
Transactions through ATM banking	41	4067	7857052	1367585	2730017
Transactions through mobile banking	41	951965	2.27E+08	64500722	56957499
Transactions through online platforms	41	30043	7161811	2046071	1800069
Value of transactions through online banking platforms	41	198216.4	47252233	13427829	11817759

Mobile banking recorded the highest number of transactions through ATM at 7857052 and lowest at 4067. Transactions through mobile banking recorded 226936090 transactions as the maximum and 951965 as the minimum. Online banking recorded a mean of 2046071 and a standard deviation of 1800069.

4.3. Correlation

Table 4.2 shows the correlation matrix

Table 4.2: Correlation Matrix

		ATM Banking	Mobile Banking	Internet Banking	RO A
ATM Banking	Pearson				
	Correlation	1			
Mobile Banking	Sig. (2-tailed)				
	Pearson				
Internet Banking	Correlation	.683**	1		
	Sig. (2-tailed)	0.000			
Internet Banking	Pearson				
	Correlation	.692**	1.000**	1	
ROA	Sig. (2-tailed)	0.000	0.000	0.000	
	Pearson				
ROA	Correlation	.538**	.727**	.733**	1
	Sig. (2-tailed)	0.000	0.000	0.000	

ATM banking has a positive and substantial association with financial success (ROA) ($\rho=0.538$, $p=0.000$), according to Table 4.2. Mobile Banking shows a favorable and significant link with ROA ($\rho=0.727$, $p=0.000$), according to the study. Internet banking has a favorable and significant link with ROA ($\rho=0.733$, $p=0.000$), according to the findings. This indicated that adding one unit to mobile banking or ATM banking would result in a significant improvement in financial performance, whereas adding one unit to internet banking would result in a minor gain in financial performance. Mateka, et al. (2016) revealed that internet financial transactions have a beneficial impact on commercial bank financial performance parameters such as bank earnings, loan books, operating costs, and customer deposits. The findings were also in line with Jepchumba and Simiyu's (2019) findings, which revealed that electronic banking had a positive impact on commercial banks' financial performance.

4.4 Regression Analysis

Results for regression were presented in the tables 4.3 4.4 and 4.5

Table 4.3: Model Fitness

R	R Square	Adjusted R Square	Std. Error of the Estimate
.765a	0.585	0.551	0.32601

The R square was 0.585, according to Table 4.3's findings. This means that ATM banking, mobile banking, and internet banking accounted for 58.5 percent of the difference in commercial banks' financial performance in Kenya.

Table 4.4: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.535	3	1.845	17.359	.000b
Residual	3.932	37	0.106		
Total	9.467	40			

The ANOVA findings revealed that the p value was 0.000. This implied that the overall model used to explain the study phenomena of the relationship between e-banking and financial performance was significant (P=0.000).

Table 4.5: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.012	0.326		-0.037	0.971
ATM Banking	2.351	0.781	0.74	3.012	0.005
Mobile Banking	-17.619	3.924	-5.111	4.491	0.000
Internet Banking	17.653	4.644	4.695	3.801	0.001

The model coefficients revealed a positive and significant association between ATM banking and financial performance (=2.351, p=0.005). Worku (2016) agreed, stating that increasing the number of Automated Machines and Points of Sales was directly proportionate to the banks' success. The findings were also consistent with those of Vekya (2017), who discovered that the number of ATM transactions is exactly proportionate to the bank's earnings, and that the same proportionality holds for the number of POS transactions and the bank's profitability. This was in line with Ali (2018), who discovered that mobile banking commissions and fees have a negative influence on the financial performance of commercial banks. On the other hand, Mueni (2019) discovered that mobile banking has a large and positive impact on Return on Assets, Return on Equity, and net profit. There was a positive and significant link between internet banking and financial success (=17.653, p=0.001). This is in line with the findings of Harelimana (2017), who found that the online banking system had a beneficial impact on the bank's overall performance.

The model was therefore confirmed as;

$$Y = -0.012 + 2.351X_1 - 17.619X_2 + 17.653X_3$$

Where,

=Financial Performance (Return on assets)

= is the regression constant

- = regression coefficients

= ATM banking.

= Mobile banking.

= Internet banking

4.5 Summary and Interpretation of the Findings

Commercial banks had the highest and lowest Return on Assets values in 2019, with the highest being 4.7 percent and the lowest being -4.5 percent. On average, this was 1.82. With a high of 226936090 and a minimum of 951965, mobile banking was the most popular, followed by ATM banking with a maximum of 7857052 and a minimum of 4067. Finally, with 7161811 transactions and a low of 30043, internet banking had the fewest transactions

ATM banking, mobile banking, and internet banking explained 58.5 percent of the variation in commercial bank financial performance in Kenya, according to the correlation and regression's findings. In addition, the overall model used to describe the study phenomena of the link between e-banking and financial success was significant at $P=0.000$. According to the findings of the study, ATM and internet banking had a positive and significant relationship with financial performance, however mobile banking had a negative and significant relationship with financial performance.

E-banking improves a bank's financial performance by lowering transaction costs and increasing the efficiency of payment and other financial services, as well as boosting the bank's client connection. Electronic banking also promotes banking culture and lowers cash usage by providing services and solutions that expedite the settlement of financial transactions. Access to the bank account at client's comfort, accessing the bank account during non-working hours, various interlinking products with electronic banking, access without the physical branch, and decrease of banking costs are some of the ways through which the financial performance is positively

impacted by e-banking.

The above findings were consistent with the findings by Ogare (2013) who affirmed that there is a significant relationship between banking through electronics and performance of banks. Addae-Korankye (2014) also asserted that technology has improved the attendance to customers and the profits that banks are able to gain. According to Okombo (2015) low costs of transacting affects financial institutions in the following ways; customers can access the bank services whenever they wish and during off-work hours and, there is no need for the customer to be physically present at the bank premises. When costs of transaction are decreased, the performance of financial institutions significantly increases.

The findings were also consistent with the findings by Ngango, Mbabazize, and Shukla (2015) who asserted that e-banking systems such as ATMs, direct payment, conversion by electronic checks, mobile and phone banking, and transactions have a great influence on the functioning of banking institutions. The findings were also in line with those of Wafula and Kombe (2015), who found that technology adoption improves quality and reduces time but does not reduce prices. More so findings were in line with those of Njoroge and Mugambi (2018) who found that electronic banking makes simple services become easy to access, ensures reduction of costs of transactions and enables financial institutes to reach more customers hence a larger market.

However, the findings contrasted with those of Mateka, et al. (2016) who found that internet financial transactions positively affect financial performance measures of commercial banks such as bank incomes, loan books, operating costs and customer deposits. Findings also did not agree with those of Ali (2018) who asserted that accessibility, fees, and commission, and risks associated with online banking are significantly affecting the profitability of commercial banks and that that increasing the privacy and security of online banking, as well as curbing threats related to this type of banking has resulted in positive impacts on the financial performance of banks.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The purpose of this research was to determine how e-banking affected Kenyan commercial banks' financial performance. Electronic banking boosts bank efficiency and effectiveness, allowing customers to transact more swiftly and conveniently. The connection, however, was not as powerful as it was with internet banking. This suggested that a one-percentage-point increase in online banking usage would result in the greatest boost in commercial bank financial performance.

Increased use of electronic banking methods by Kenyan commercial banks will result in a higher Return on Assets and, as a result, a better financial performance. However, of all the electronic banking options, ATM banking has the lowest correlation. Banks had adopted e-banking technology to diverse degrees, with some reporting thousands of transactions through various platforms and others registering only a few, according to the data.

ATM banking is positively related to performance, according to the study. Access to the bank account at client's comfort, accessing the bank account during non-working hours, various interlinking products with electronic banking, access without the physical branch, and decrease of banking costs are some of the ways through which the financial performance is positively impacted by e-banking. In contrast to ATM and internet banking, a regression research found a negative and significant relationship with mobile banking.

E-banking improves a bank's financial performance by lowering transaction costs and increasing the efficiency of payment and other financial services, as well as boosting the bank's client connection. Electronic banking also promotes banking culture and lowers cash usage by providing services and solutions that expedite the settlement of financial transactions. The influence of ATM banking, mobile banking, and internet banking was studied in depth.

5.2 Conclusion

If commercial banks used ATMs and internet banking more frequently, their financial performance would improve. Mobile banking, on the other hand, appears to have a detrimental impact on commercial bank financial performance, according to the study. ATM and internet banking, according to the study's findings, have a positive impact on commercial bank financial performance. As a result, increasing the use of mobile banking will have a negative impact on financial performance.

Adoption of ATM banking and internet banking by commercial banks will bring about reduction in the transaction costs which will increase the number of customers leading to improved financial performance. Further there will be increased efficiency and effectiveness in banks operations which will increase the speed of operations and hence more customers will be attracted to the banks.

The higher the number of transactions through ATM banking and internet banking the higher the Return on assets. This implies that for commercial banks to report increasing financial performance they can achieve this by increasing the use of ATM banking and internet banking and lowering the transaction costs since the transaction costs lead to reduced use of ATM banking and internet banking by customers which would limit the ROA. The significant costs associated with mobile banking are the outcome of mobile banking's detrimental impact on financial performance. Reducing the costs involved would therefore curb this problem and encourage customers hence improve the financial performance.

Banks that make use of recent technology in the financial operations report higher ROA than banks that assume the use of technology in their operations. Most customers would be encouraged to continue their operations with the commercial banks if they are able to make transactions at the convenience of their homes or offices or wherever they are since it will save their time as well as the cost involved in moving to the banks premises. More so the inconveniences caused by long queues in the banking halls is eliminated and hence this attracts more customers as well as retention of the existing ones. Increasing the number of Automated Machines, Point of sales was directly proportional to the performance of the banks

The use of electronic banking encourages saving and borrowing culture by customers. Enhanced savings will bring more money into the banks, allowing them to lend more money, resulting in increased bank profitability and consequently improved financial performance. On the side of customer, they will be excited to access loans through their phones which they would have otherwise not accessed or have delays accessing and hence improve the customer satisfaction and relations with the banks. This will increase the customer base for banks which is a factor that improves the financial performance.

Kenyan commercial banks are growing their use of electronic banking methods such as mobile banking, ATM banking, and internet banking, resulting in an increase in their Return on Assets and, as a result, a positive shift in their financial performance. Electronic banking increases a bank's efficiency and effectiveness by allowing customers to trade more swiftly and conveniently. Increases in the privacy and security of online banking, as well as the reduction of threats associated with this type of banking, will also have a positive effect.

5.3 Recommendations

Commercial banks in Kenya are advised to accelerate the usage of electronic banking in order to remain competitive due to rapidly evolving technology and increased competition. Banks to enhance the use of electronic banking particularly ATM banking and internet banking. They should put up more enhanced strategies to attract their customer to using ATMs and mobile banking. They should also increase the budget towards the implementation of the same. They should also try to reduce the amount of fees charged on the transactions on mobile banking so as to attract more customers and to gain more profits.

The right strategies that will encourage customers to make use of electronic banking should be formulated. These may include transaction costs that are affordable and lesser than the cost involved in the conventional method of banking. Banks should also make sure that the procedure and process for electronic banking is simple which will increase the convenience and efficiency of electronic banking by customers. This will ensure a user friendly experience for all customers regardless of their abilities or disabilities that may be a limitation to their use of electronic banking in their personal banking. The customer experience can also be enhanced by making use of voice over services which will target those with vision issues. With this the banks will be able to reach to

a wider market hence improve the customer base.

Commercial banks should improve the security of electronic banking, according to the study, because this will solve the problem of fraud and hacking, which would otherwise drive users away from electronic banking. They should come up with extensive measures for protecting the customers' money their accounts as well as their personal information. This can be done through the right customer verification method and by providing courtesy calls where there is suspicion of fraud or hacking. This will improve the customers trust with the banks and their satisfaction leading to retention. Customer retention is a strategy for improving the financial performance of banks.

Commercial banks are also encouraged to keep updating and improving the security tools and also do extensive investigations concerning the effectiveness of these tools. They should also follow the polices and guidelines provided by the government through the central bank of Kenya as their regulator regarding the handling of customers' complaints as it will improve the issue of trust and security among the customers.

The study also recommends the central bank of Kenya as the main regulator and supervisor of commercial banks in Kenya to come up with effective polices regarding the use of electronic banking among the commercial banks in Kenya. They should also ensure that the polices they set up are conducive to lead to a positive change in the electronic banking and again in profits. Central bank of Kenya is also encouraged to support the commercial banks in handling customer complaints and also in thwarting the effects of fraud and hacking.

5.4 Limitations of the study

This study was limited in a number of ways. The study was conducted among commercial banks in Kenya only. The findings of this study therefore may not be applicable to other banks in other countries or regions. This is because the operations of the commercial banks in other countries and other regions may not be the same. The banks may also differ in terms of the use of electronic banking and customer acceptance of the use of electronic banking. More so the charges involved and the processes and procedures may also be different.

The study was also limited in terms of the methodology adopted. Since the study could not incorporate all other methods the findings of the study may not be thorough since other methods

may bring out some aspects that could not be discussed using the methodology in this study.

The study was also limited in terms of the theories that anchored it. The use of model of technology acceptance, Innovation diffusion theory and Schumpeter theory of innovation may not be adequate in describing the study phenomena. Other theories may also bring out some aspects of electronic banking which may not be found in the theories discussed. More so the technology may change with time and hence the study results may become outdated hence the need for review in future.

5.5 Areas for Further Research

The current study looked at the impact of e-banking on commercial banks' financial performance in Kenya, with a particular focus on the impact of ATM banking, mobile banking, and internet banking. Future research can look into how electronic banking influences other parts of a bank, such as long-term operational efficiency and overall success.

Moreover, this study made use of secondary data. A combination of primary data and Secondary data could lead to better conclusions. The use of primary data may help curb the problem of unavailability for published data which may lead to better generalizations of the study findings.

The number of transactions using various electronic banking systems was used in the study. Future research should look at other metrics, such as transaction value, to gain further insight into the impact of electronic banking on commercial bank financial performance. As a result, both measurements might be used to supplement the findings.

Finally, because the research was centered on commercial banks. Future studies could focus on other institutions in the banking sector or in other sectors that may be affected by the use of electronic banking. These may include the microfinance institutions small and micro enterprises and such companies in the manufacturing sector and other service sectors.

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APPENDICES

Appendix I: Data Collection Sheet

Bank	Number of ATMs	Number of ATM debit cards	Number of POS machines	Number of ATM transactions	Number of active agents	Registered mobile money accounts	The volume of cash in/out	Value of total cash in/out	Number of online transactions	value of Online transactions	ROA	ROE

Appendix II: Licensed commercial banks

1. Victoria Commercial Bank
2. United Bank for Africa
3. Standard Chartered Kenya
4. Stanbic Holdings Plc
5. Spire Bank
6. Sidian Bank
7. SBM Bank Kenya
8. Prime Bank (Kenya)
9. Paramount Universal Bank
10. NCBA Bank Kenya
11. National Bank of Kenya
12. Middle East Bank Kenya
13. Mayfair Bank
14. M Oriental Bank
15. Kingdom Bank Limited
16. Kenya Commercial Bank
17. Imperial Bank Kenya (In receivership)
18. I&M Bank
19. Housing Finance Company of Kenya
20. Habib Bank AG Zurich
21. Gulf African Bank
22. Guardian Bank
23. Guaranty Trust Bank Kenya
24. First Community Bank
25. Family Bank
26. Equity Bank Kenya
27. Ecobank Kenya

28. Dubai Islamic Bank
29. Diamond Trust Bank
30. Development Bank of Kenya
31. Credit Bank
32. Cooperative Bank of Kenya
33. Consolidated Bank of Kenya
34. Citibank
35. Chase Bank Kenya (In Receivership)
36. Bank of India
37. Bank of Baroda
38. Bank of Africa
39. Access Bank Kenya
40. Absa Bank Kenya
41. ABC Bank (Kenya)

Appendix III: Data

Bank	ROA	transacti ons through ATM banking	transacti ons through mobile banking	transacti ons through online platforms	value of transacti ons through online banking platforms	ATM Banki ng	Mobil e Banki ng	Intern et banki ng	logro a
Consolidat ed Bank of Kenya Limited	-4.5	426226	99765687	3148477	20773036	0.75	0.9	0.84	0
Middle East Bank (K) Limited	0	4067	951965	30043	198216.4	0.56	0.78	0.69	-1.37
M- Oriental Bank Limited	0.1	7783	1821839	57495	379340	0.59	0.8	0.71	-1.09
National Bank of Kenya Limited	0.2	17588	4116795	129921	857191.7	0.63	0.82	0.74	-0.73
Ecobank Kenya Limited	0.3	7857052	91806444	2897293	19115776	0.84	0.9	0.84	-0.46
UBA Kenya Bank Limited	0.4	40026	9368811	295668	1950757	0.66	0.84	0.77	-0.38
Chase Bank (K) Limited	0.4	57052	75587037	2555409	15063328	0.68	0.9	0.83	-0.41

Mayfair Bank Limited	0.5	7857052	42306374	1335135	9235875	0.84	0.88	0.82	-0.3
Gulf African Bank Limited	0.5	45301	10603534	334634	2207849	0.67	0.85	0.77	-0.32
African Banking Corporation Limited	0.5	4071	1315621	35548	2147900	0.67	0.85	0.77	-0.33
SBM Bank Kenya Limited	0.6	7857052	27273539	860718	5678848	0.84	0.87	0.8	-0.22
Spire Bank Ltd	0.7	655568	1.53E+08	4842590	31950464	0.76	0.91	0.85	-0.16
Habib Bank A.G Zurich	0.8	78135	18288784	577171	3808058	0.69	0.86	0.79	-0.09
Trans-national Bank Limited	0.9	85831	20090274	634023	4183162	0.69	0.86	0.79	-0.05
Sidian Bank Limited	0.9	851216	1.99E+08	6287817	41485787	0.77	0.92	0.86	-0.05
Paramount Bank Limited	0.9	83578	19562943	617381	4073362	0.69	0.86	0.79	-0.06
Credit Bank Limited	0.9	87841	20560790	648872	4281132	0.69	0.86	0.79	-0.04
Guardian Bank	1.1	106785	24994848	788805	5204383	0.7	0.87	0.8	0.05

Limited Barclays Bank of Kenya Limited	1.1	77052	72957267	2622648	13514764	0.69	0.9	0.83	0.03
Family Bank Limited	1.2	118617	27764363	876208	5781047	0.71	0.87	0.8	0.1
I & M Bank Limited	1.3	123531	28914496	912504	6020525	0.71	0.87	0.8	0.11
Victoria Commerci al Bank Limited	1.4	133854	31330929	988764	6523671	0.71	0.87	0.81	0.15
Stanbic Bank Kenya Limited	1.4	7857052	1.76E+08	5565203	36718126	0.84	0.92	0.85	0.15
Prime Bank Limited	1.6	149462	34984135	1104054	7284335	0.71	0.88	0.81	0.2
NCBA Bank Kenya PLC	1.6	149334	34954284	1103112	7278119	0.71	0.88	0.81	0.2
First Communit y Bank Limited	1.8	969533	2.27E+08	7161811	47252233	0.78	0.92	0.86	0.25
Diamond Trust Bank Kenya Limited	1.9	178460	41771583	1318257	8697606	0.72	0.88	0.81	0.27
	2.8	270444	63302174	1997735	13180667	0.73	0.89	0.83	0.45

Standard Chartered Bank Kenya Limited	2.8	266826	62455342	1971010	13004341	0.73	0.89	0.83	0.45
KCB Bank Kenya Limited	2.8	266753	62438189	1970469	13000770	0.73	0.89	0.83	0.45
Bank of Baroda (K) Limited	2.9	276179	64644429	2040095	13460149	0.74	0.89	0.83	0.46
Citibank N.A Kenya Co-operative Bank of Kenya Limited	3.3	310540	72687205	2293915	15134802	0.74	0.9	0.83	0.51
Imperial Bank Limited	3.4	7857052	19268938	608103	4914292	0.84	0.86	0.8	0.53
Jamii Bora Bank Limited	3.5	7857052	22157406	699259	5467409	0.84	0.87	0.8	0.54
Equity Bank Kenya Limited	3.6	344613	80662681	2545611	16795442	0.74	0.9	0.83	0.56
Charterhouse Bank Limited	3.6	85052	78216806	2409174	16356480	0.69	0.9	0.83	0.56
Bank of India	3.7	356634	83476345	2634406	17381298	0.74	0.9	0.83	0.57
	4.4	605985	1.42E+08	4476329	29533947	0.76	0.91	0.85	0.8

DIB Bank Kenya Limited Bank of Africa Kenya Limited	4.6	441739	1.03E+08	3263068	21529088	0.75	0.9	0.84	0.67
Guaranty Trust Bank (K) Ltd	4.7	543539	1.27E+08	4015051	26490522	0.76	0.91	0.85	0.76
Developm ent Bank of Kenya Limited	7	669446	1.57E+08	4945110	32626871	0.77	0.91	0.85	0.85