

**ADOPTION OF DIGITAL BANKING TECHNOLOGY AND
FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN
KENYA**

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DECLARATION

I declare that this is my original work and has not been presented for a degree in any other university. No portion of this project can be reproduced without my permission and that of the university.

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DEDICATION

I dedicate this research project to my wife Jane, my son Pascal and daughter Ruby.

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OPERATIONAL DEFINITION OF TERMS

Digital Wallet: An electronic device that allows an individual to make electronic transaction through his bank account.

Financial technology innovation: An introduction of new technology that aims at improving methods of delivering financial services away from the traditional methods.

Commercial banks: A financial institution that accepts money in terms of deposits and lends out money to customers at an interest rate.

Digital banking: Digital banking involves the use of a mobile phone or another electronic device to undertake financial transaction such as deposits, withdrawals, loans, payments and balance access.

Financial performance: Financial performance is the measure of the results of a firm's policies and operations in monetary terms.

Financial intermediation: Is the movement of funds from surplus units by way of savings through financial institutions to deficit units by way of lending.

E-banking withdrawal: The removal of money or cash deposits from one's bank account by use of digital banking platform.

Access to e-banking service: Refers to the ability of customer to undertake a banking transaction through the use of a mobile or electronic device.

Turnaround time: Refers to the speed with which a customer would complete a transaction using the mobile device.

System down time: Refers to the period, which a digital banking platform is not accessible to customers because of connectivity problems.

E-Transactions: Refers to process of transferring money through a computer-mediated network.

E-Commerce: Refers to the buying and selling of products over the internet.

ABBREVIATIONS AND ACRONYMS

ATM:	Automatic Teller Machine or Automated Teller Machine
CBK:	Central bank of Kenya
E-banking:	Electronic Banking
E-funds transfer:	Electronic Funds Transfer
KCB:	Kenya Commercial Bank
KSHS:	Kenyan Shilling
E-banking:	Digital banking
M- transactions:	Mobile transactions
PDA:	Personal Digital Assistant
SMS:	Short Message Service
NP:	Net profit of commercial banks
AM:	Access to e-banking services
TAT:	Turnaround time of e-banking services
CM:	Costs of E-banking services

ABSTRACT

Commercial banks play a leading role in the economic development of a country and this role of can be achieved only if the banks are stable. Digital banking technology is one way that commercial banks have used to improve their financial performance which is largely based on retail and corporate banking activities. Retail banking customers are widely spread geographically and this makes it a challenge to the banks to network in such a way that enables them to capture a wide area of customers as possible. Digital banking technology innovations has been established as one way of addressing the challenge of network. From the inception of digital banking, banks have improved their networks in areas of deposits, withdrawals and other banking activities. Despite the innovative ideas in digital banking, still there are gaps as some banks still fail and face imminent collapse. The objective of this study was to establish how digital banking technology innovations affects the financial performance of commercial banks. The study took a descriptive survey design and was driven by three objectives namely; determining the effect of access to digital banking technology on financial performance, assessing the influence of the turnaround time of digital banking technology on financial performance, and determining the effects of digital banking technology costs on financial performance. This study was anchored on financial intermediation theory, innovation diffusion theory and modern economics theory. A questionnaire was used to collect primary data over a target population of 42 commercial banks in Kenya. The study involved a census of the commercial banks in Kenya as at September 2018 and it encompasses collection of data basically through self-administered questionnaires targeting the finance and IT managers of the banks in their headquarters in Nairobi. The data collected was analysed using a descriptive method. The responses were tabulated, coded and processed by use of a computer statistical package for social scientists (SPSS) and findings of the study, were analysed and presented using statistical methods such as pie charts and bar graphs and frequency tables. From the findings and summary, the study concluded that the ease of access to digital banking through digital-banking technology innovations had a positive influence on the financial performance of commercial banks in Kenya. The study also concludes that the turnaround time of digital banking technology innovations had a positive impact on the financial performance of commercial banks in Kenya with many of the banking institutions recording high amount of deposits and improved loan values thus creating an opportunity of increasing their customer base.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Digital banking technology through mobile phones is revolutionizing the global banking and payment industry. Digital banking offers millions of people a potential solution in emerging markets that have access to a cell phone, yet remain excluded from the financial mainstream (Kathuo, 2015). According to Owen mobile banking refers to provision and availing of banking and financial service with the help of mobile telecommunication devices as a mobile phone which is most used in developing countries. Banks have in the recent past shifted from traditional banking to branchless mode of banking since it offers new opportunities for banks to provide added convenience to their existing customers in both developed and developing countries in order to reach a large population of unbanked customers in emerging markets (Mwange, 2013).

Financial performance of commercial banks is critical to the performance of the economy since banks are the main money suppliers for both individuals and institutions. In recent years' banks have developed innovative products and offered a wide range of services in an effort to improve their financial performance which is the ultimate goal of banks. Digital banking has increased provision of financial services with a wider choice of services geared to all levels of society (Vaidya, 2011).

The need and opportunity for mobile money are shared by businesses and their customers. For businesses across industries, the mobile channel offers the opportunity to reach new customers as well as to provide better service to existing customers (Chepkemoi, 2013).

Banks rely on number of customers and type of banking so as to obtain good return on capital. The performance of banks largely depends on retail and corporate banking activities where the retail customers are widespread in different geographical locations making it a challenge to banks to provide services in such a widespread retail customer. Digital banking established a way in which the banks could address this challenge since brick and mortar system also proved to be expensive.

With the current innovations in the banking industry with regard to mobile and internet banking Bank's performances is still varied with some banks improving their performance despite the economic challenges while some of the banks have performed dismally and are still facing imminent collapse. This may be because the banks have not fully embraced the digital banking system.

The banking sector has seen a steady growth in performance over the recent years from 2011 to 2016. According to CBK annual report (2012), The banking sector registered improved performance in 2012 with profit before tax increasing by 20.6 percent from Ksh. 89.5 billion in December 2011 to Ksh. 107.9 billion in December 2012. This growth is also seen in the 2016 report where the banking sector registered improved performance in 2016 with profit before tax increasing by 10.0 percent to KShs 147.4 billion in December 2016 from KShs 134.0 billion in December 2015. Notably during the same period some banks such as National bank in 2015, family bank and housing finance in 2016 registered drops in profitability while others such as Dubai bank, chase bank and imperial bank collapsed.

1.1.1 Financial system in Kenya

Financial system comprises a network of institutions that offers financial services in an economy. According to CBK Financial sector report (2015), the sector comprises of the banking, capital markets, and insurance, pensions, and savings credit cooperatives. The other participants are money remittances companies, development finance institutions, foreign exchange bureaus and microfinance institutions.

There are also safety nets and resolution institutions such as the Kenya Deposits Insurance Corporation for commercial and micro finance banks; Investor Compensation Fund for Capital Markets sub sector; and the Insurance Policyholders ‘Compensation Fund for the insurance sub sector. These are supported by Credit Information Sharing (CIS) platforms through the Credit Reference Bureau and a vibrant Financial Markets Infrastructure (FMI) system comprising of trading, payments and settlements, and custodial services platforms.

The banks in this system assist in transferring money from surplus areas to deficits. In other words, the bank’s core mandate is to lend money to borrowers and take deposits from savers. Banking is the business activity of accepting and safeguarding money owned by other individuals and entities, and the lending out this money in order to earn a profit (Okiro & Ndungu, 2013).

Today, different types of banks have been established for different purposes such as commercial banks, mutual funds and international banks. The banking system has seen great innovations through digital banking the enables banks to accept the deposits and issue out loans through the digital banking network to increase their networks and also to include

a majority of the unbanked population into the system. According to Cyton investment report 2016, financial inclusion in Kenya has continued to rise, with the percentage of the population living within 3 kilometers of a financial services access point rising to 77.0% in 2016 from 59.0% in 2013. This has been driven by digitization, with Mobile Financial Services (MFS) rising to be the preferred method to access financial services in 2016.

1.1.2 Status of Commercial banks in Kenya

Commercial banks in Kenya accept deposits from customers and make a profit by using the deposits to offer loans to businesses at high interest rates.

This type of banking includes national and state-chartered banks, stock saving banks, and industrial banks. This kind of banking service has provided many services to the society which includes the basic functions of savings, providing loans, dealing in time deposits, etc. The reserve requirements of these banks are totally different from the mutual saving banks. Commercial banks are therefore the foundation of the payment system in many economies by playing an intermediary role between savers and borrowers (Kithaka, 2014).

The primary objective of commercial banks is to make profits and thereby increase the wealth of the owners of the bank by taking funds lending customer deposits at rates that are sufficient to cover costs. Commercial banks are faced by unique constraints, which reflect both particular operating characteristics of banks and the historical and political views held towards banking.

According to Jessica (2015), the top four challenges facing commercial banks are; not making enough money, or return on investment that shareholders require, not meeting

Consumer expectations because they are not delivering the level of service that consumers are demanding, especially with regards to technology, increasing competition from financial technology (FinTech) companies which are usually start-up companies based on using software to provide financial services. And lastly regulatory requirements which continue to increase and banks need to comply by building systems and processes to keep up with the escalating requirements.

Kenya financial system is dominated by commercial banking. According to Federer (2006), like many developing countries in Africa, Latin America and Asia, Kenya's banking system is centered in the capital and big town with few if any financial service in rural. CBK financial stability report (2015), stated that as at December 31, 2015, Kenya's banking system comprised of the Central Bank of Kenya as the regulator, 42 commercial banks, 1-mortgage finance company, 8 representative offices of foreign banks, 12 microfinance banks, 3 Credit Reference Bureaus (CRBs), 14 money remittance companies and 80 foreign exchange bureaus. Citibank, standard chartered and Barclays Bank are among the foreign owned financial institutions in Kenya. The government of Kenya has a substantial stake in three of Kenya's commercial banks. The remaining local commercial banks are largely family owned (Okiro, Ndungu 2013).

The banking industry however comprises of all the above except the CBK. The Companies Act, the Central Bank of Kenya (CBK) Act and the Banking Act are the main regulators and governors of banking industry in Kenya. These Acts are used together with the prudential guidelines which Central bank issues from time to time. To address issues that

affect the Banking industry in Kenya, banks have come together and formed a forum under the Kenya Bankers Association.

1.1.3 Financial performance of commercial banks in Kenya

Financial performance refers measuring the results of a firm's policies and operations in monetary terms (Business dictionary, 2015). Vincent, Gemechu (2013) explains that good financial performance rewards the shareholders for their investment whereas, poor banking performance can lead to banking failure and crisis which have negative repercussions on the economic growth. The financial soundness of a financial institution may be strong or unsatisfactory varying from one bank to another.

Mugembe (2008) notes that external factors such as deregulation: lack of information among bank customers, homogeneity of the bank business does cause bank failure. The activities undertaken in e-banking contribute to the financial soundness of the commercial banks in Kenya. Some useful measure of financial performance is the after tax net profit which represents the actual profit after accounting for all costs and taxes.

Kenyan Banks have realized tremendous growth in the last five years and have expanded to the east African region. The banking sector registered improving performance with profit before tax increasing from Ksh. 89.5 billion in December 2011 to 147.4 billion in December 2016 (cbk annual report, 2015). According to CBK financial stability report (2015), The banking industry's overall capital adequacy ratio averaged 19 per cent against a statutory minimum of 14.5 per cent with average liquidity ratio of 38.3 per cent as at end December 2015. In the year 2015 Two banks were placed under receivership in August and

October, of which one was subsequently placed under liquidation. A third bank was briefly placed in receivership in the first half of 2016, but reopened again under new management. The report states that CBK, working closely with the KDIC, contained the impact of the three banks. However, placement of the three banks in receivership, created panic among depositors in small banks, causing liquidity glitch.

The banking industry in Kenya has also involved itself in automation, moving from the traditional banking to better meet the growing complex needs of their customer and globalization challenge. From CBK annual report (2016), Customer deposits, which are the main source of funding for the banks grew by 5.3 percent from KShs 2,485.9 billion in December 2015 to KShs 2,618.4 billion in December 2016. The growth was supported by mobilization of deposits through agency banking and mobile phone platforms.

New regulations especially with the passing of the new constitution in 2012 and prudential guidelines issued by CBK have been a challenge to banks. CBK required financial institutions to build up their minimum core capital requirement to Kenya shillings 1 Billion by December 2012. The Terrorist attacks on the twin towers in United States of America emphasized and led to the mandating Acts like Anti-money laundering. Nations are working closing to ensure that proceeds of crime do not get into the financial systems of the world. The global crisis affected banking industry in Kenya and more so the mobilization of deposits and trade reduction. This necessitated banks to implement the BASEL 3 updates.

Deregulation of interest rates has also hindered the banking industry from maximizing on interest income affecting the performance of banks. In 2016, the Kenyan parliament

weighed in the banking industry by passing a bill capping interest rates on loans and providing a minimum interest rate to be paid on deposits. The law provides that banks should charge a maximum of 4% above the CBK rate on loans and a minimum of 7% on customer deposits (Banking amendment bill 2015).

There has been increased competition from local banks as well as International banks, some of which are new players in the country. This has served the Kenyan economy well as the customers and shareholder are the ones who have benefited the most. The Stiff competition in Kenya's financial sector is forcing institutions into adopting new forms of technology to reduce the costs of doing business and widen customer base for enhanced profitability. Digital banking is a system that enables customers of a financial institution to perform certain financial transactions through a mobile device such as mobile phones.

Digital banking is becoming a critical function of banks and financial institutions in the present environment to the fact that it has been widely accepted by customers, it reduces bank operations costs and it may create additional profits. It is a dynamic function. The new innovative systems (such as digital banking) are specially targeting the earning but unbanked population in rural and hard to reach areas.

Due to the above challenges, the banks are now focusing on diverse customer needs rather than the traditional banking products consequently this has led to improved use of technology. According to CBK report on performance of Banks (2013), Kenyan banks have continued to embrace new technology to improve service delivery. Examples of new innovations in the Kenyan banks include adoption of ATMs, smart cards, internet and digital banking. The technology innovations have influenced the banking sector one way

or another. Kassim (2005) explains that the technological revolution has produced new development in the banking industry.

1.1.4 Digital banking technology innovation

Mobile banking involves the use of mobile devices to perform banking activities. According to Soderbeig (2008), m-banking, is the term we use to describe financial services delivered via mobile networks using mobile phones. Usually, those services include withdrawing, sending and saving money, depositing, taking a short term loan as well as making payments. Digital banking in this regard is therefore the use of mobile phones to perform electronic banking services.

Digital banking technology has transformed the way people in the developing world transfer money and now it is poised to offer more sophisticated banking services which could make a real difference to people's lives. This type of banking can offer a wide variety of services ranging from account information, which has to do with alerting the customers on the updates and transactions on their account through their mobile phones. People receive short messages on their phones informing them of their immediate transactions in their bank accounts. Also, they help in payments (utility bills), deposits, withdrawal, transfers, purchase airtime, request bank statements and perform certain crucial banking tasks; all in real time over their mobile phones. Banks today provide credit services through the m/banking software.

According to Nasikye (2009) e-banking today can be performed through SMS. It is usually implemented through the use of special software that can be downloaded to the mobile

phone. The regulator may or may have not defined these services as banking services, depending on the banking legislation of the country in question, and also on which services are offered.

Mobile networks in Kenya offer m-money services in the name of M-pesa by Safaricom, Orange money by Orange and Airtel money by Airtel. Currently the mobile money market size is about 15 million users transferring Kshs.2 billion daily, of these over 14 million are Mpesa customers. M-money providers have partnered with commercial banks such as Standard Chartered Bank, I&M Bank, and Kenya Commercial Bank, Barclays and Co-operative to offer mobile based financial products that aim to reach the unbanked. On the other hand, some banks like equity have decided to venture into the telecom industry by providing own e-banking platform.

According to communication sector statistics report (2017), the number of mobile money subscriptions stood at 27.5 million subscriptions whereas the number of active mobile money transfer agents was registered at 174,018. The volume of transactions on this platform was recorded at 471.1 million with 1.1 trillion Kenya Shillings moved during the period (2016 to march 2017).

Digital banking was introduced as a competitive tool and it's here to stay, not however without challenges; Commercial banks have tried to come up with their e-banking services and also to partner with telecom companies (Safaricom, Orange and Airtel) but still telecommunication mobile companies seem to be dominating in the e-banking services. The commercial banks are now coming up with innovation that will assist to reduce their costs and solve the tension between sustainability and reaching to the very poor. This is

therefore; forcing banks to link with mobile telecom companies to provide better quality services given that the low income earners can now own mobile phone.

In spite of the success of digital banking globally and good performance of commercial banks in Kenya, there are a number of challenges facing the m banking model. To begin with, many of the banks that have embarked on digital banking roll-out have found that agents lack the capacity to handle large transactions of cash and that they are not spending enough on security measures leading to poor performance of digital banking (Melinda, 2012).

1.1.5 Services offered through digital banking technology

E-banking can offer a wide variety of services ranging from account information, which has to do with alerting the customers on the updates and transactions on their account through their mobile phones, payments (utility bills), deposits, withdrawals, transfers, purchase airtime, request bank statements (Soderberg, 2008).

Banks have now implemented platforms over which they also offer loans to customers and where the loans are repaid. With the use e-banking you can do all this on your mobile phone: Make a balance enquiry. Request a mini statement of last 3 transactions. Transfer funds across your accounts and other pre-nominated accounts. Pay utility bills for Kenya power ltd company and Nairobi Water and Sewerage services, request a loan, repay loans, request a cheque book and get alerts for withdrawals on your account and withdraw from account.

1.1.7 Access to Digital banking technology services

Customers need to subscribe to digital banking service of their respective bank to be able to access the digital banking activities such as depositing, withdrawing or applying for a loan (Mutua, 2013). Banks make money by looking for cheap deposits at lower interest rate, and lending these cheap deposits in long term at higher rates. Deposits enhance liquidity of banks and therefore as a way of seeking deposits from the unbanked population, digital banking has become an effective tool through which banks mobilize deposits. By providing digital banking technology to the customers, banks are seeking to increase the customer deposits to enhance their liquidity. However, this comes at a cost after banking amendment bill of 2016 that requires that customer deposits are subject to at least 7% interest leaving the banks to trade-off the deposits liquidity and interest expense.

There should be adequate sources of liquidity compared to the present and future needs, and availability of assets that can be easily converted into cash without unnecessary loss. The cash management practices should ensure that an institution is able to maintain a level of liquidity sufficient to meet its financial obligations in a timely manner; and capable of quickly liquidating assets with minimal loss (Uniform Financial Institutions Rating System, 1997).

Ithomovich (2009) used cash to deposit ratio to measure the liquidity level of banks in Malaysia. However, the study will try to find out if liquidity level on basis of deposits of banks has any relationship with the performances of banks.

Just as in e-banking deposits, e-banking customers have the liberty to withdraw their funds using digital banking platforms. However, the amount that can be withdrawn is limited to certain amount in a day. While giving out this service, banks are alive to the fact that if they experience a reputational risk then there can be a run on the bank and customers may use this platform to withdraw deposits. They therefore create limits to manage their liquidity risk. Grier (2007) emphasizes that "the liquidity expresses the degree to which a bank is capable of fulfilling its respective obligations". Liquidity refers to the ability of the bank to fulfill its obligations, mainly of depositors. According to Dang (2011) adequate level of liquidity is positively related to bank financial performance. The most common financial ratios that reflect the liquidity position of a bank according to the above author are customer deposit to total asset and total loan to customer deposits. Other scholars use different financial ratio to measure liquidity.

The mobile banking technology similar to that of Airtel money, Safaricom's M-PESA among others have made banks uncomfortable given the shift of most transactions from banks to mobile phone stalls. Consequently, banks have also started to develop new platforms that enable customers to save, earn and borrow short term funds through their phones. This platform has seen the emergence of M-shwari (CBA), m-kopa by Faulu bank and KCB mobile money. Equity bank has however chosen to work independently by entering into the telecom industry through introduction of equitel. According to KCB group CEO, Loans borrowed through KCB Group's digital banking service hit Sh7.8 billion one year after its launch reflecting the rising significance of the product in creating assets for banks. Equity Bank CEO James Mwangi while announcing the bank's performance early 2016 said that the bank receives about 80,000 applications for loans on a daily basis out of

which only 1,000 comes through the branches. The average monthly loan is Sh7,000 while customers applying for one-year loans take up to Sh120,000,”

Commercial Bank of Africa (CBA) which partnered with Safaricom to pioneer the first digital banking platform M-Shwari had disbursed loans worth Sh24 billion by early 2015. The platform had over 9 million customers since inception in 2013(Daily nation news 15 march, 2016). According to Financial Sector Deepening Report (FSD Kenya) 2016, 18 per cent of the population now use digital banking platforms to access their bank accounts. The digital banking arena now occupied by KCB’s M-Pesa, M-Shwari and Equitel offers competitive edge for Kenyan lenders, giving easier and broader access to customers.

1.1.8 Turnaround time of digital banking technology Services

Customers want access to their money and information about accounts, transactions, and claims on the go, in real time, and they won’t tolerate delays. To stay ahead of the competition, financial services institutions must offer customers secure access across the spectrum of devices in an environment where milliseconds count.

Evidence suggests that the first benefit that results from e-banking for financial institutions is improved customer service to existing customers. According to Efma and McKinsey (2014), the primary drivers are all time access and convenience whereas the main concerns are the speed of service and security. If the main concerns are addressed, then it will lay the ground for a further increase in uptake of digital banking service. With digital banking, customers access the service from anywhere anytime. This therefore requires the banks to ensure that the systems are up and running throughout. Banks unable to meet performance and reliability requirements may lose customer confidence. For instance, if a user tries to

access the service and most of the time the service is unavailable, it means that user will lose confidence with the e-banking service and maybe even with the bank totally and this might decide to give up on the service completely (Venable Telecommunications, 2008).

1.1.9 Digital banking technology maintenance and operation costs

Kenya digital banking arena is fast developing and shading the landscape of cashless transactions exponentially (Kithaka, 2014). This digital drive has become part of most banks strategy and corporate goal with a view of reducing costs and enhancing competitiveness. In essence when costs are minimized there is a likelihood of positive impact into the Banks financial performance (Kithaka, 2014). Most banks often are too cautious of high staff costs and if such can be minimized due to Digital banking take on the better. The implementation of the new service requires immense financial resources, both physical infrastructures. Human resources and other resources required for the successful implementation of the service.

Commercial banks will have to deal with the cost of on boarding clients on their e-banking platform and maintaining the system to operate efficiently. Currently other than personnel cost, mobile technology is a major part of the commercial banks budget. Kenya Commercial Bank in 2012 attributed the increase in their operating costs mainly investment in information technology and network infrastructure notably for the KCB Mobi Bank (Oduor, 2012).

1.2 Statement of the problem

Commercial banks have embarked on enhanced digitization putting e-banking on the forefront with a view of improving their network base, reducing personnel costs, competing

favorably with their peers and to improve on performance, however, with all this heightened digitization, some banks have shown drop in performance, put under statutory management or closed shops.

In 2017 while releasing the first half year results, the CEO of KCB said that their strategy focuses on growing digital banking so as to enhance customer experience and spread their network. The first half numbers indicate that non-branch channel systems—Mbenki, KCB M-PESA, Mobi and payments— accounted for 86% of KCB's total transactions (Oigara, 2017). According to cbk annual report 2015, Robust ICT platforms have enabled banks to roll out agency and digital banking services where customers are able to carry out banking services such as deposits and withdrawals from a third party contracted by the bank. However, the Business daily analyst in their banking report (2016) have warned that the wide shift to non-branch banking carries a risk of lower transactional income, given that these services are cheaper compared to banking hall fees and competition will drive them further down.

Commercial banks are the foundation of the payment system in many economies by playing an intermediary role between savers and borrowers (Kithaka, 2014) and are therefore critical for sustainability of banking services. The number of unbanked population has been low because majority of population cannot access banking services, however, Development and the introduction of digital banking in Kenya had a revolutionary impact on the scope of business and how day to day transactions are carried out. Banks have welcomed wireless and mobile technology into their boardrooms to offer their customers the freedom to pay bills, planning payments while stuck in traffic jams, to

receive updates on the various marketing efforts while present at a party to provide more personal and intimate relationships (Ongwenyi, 2012). This is one of such innovations which have changed the shape of banking in Kenya aimed at providing customers with more convenient banking experience.

The Effects of Digital banking on the financial performance of commercial banks in Kenya is not clear as there are scanty documentation available on the issue of digital banking and its effects on the financial performance of commercial banks. In Kenya, how the utilization of digital banking has contributed to the performance or non-performance of these banks is not adequately documented.

1.3 Objectives of the study

1.3.1 General objectives

The general objective of this study is to establish the effects of digital banking technology on the financial performance of commercial banks in Kenya.

1.3.2 Specific objectives

1. To determine the effect of access to digital banking technology on financial performance of commercial banks in Kenya.
2. To determine the effects of turnaround time of digital banking technolog on financial performance of commercial banks in Kenya.
3. To establish the effects of costs of adoption and maintenance of digital banking technology on financial performance of banks.

1.3.3 Research questions

- a) Does access to digital banking technology by customers affect the performance of commercial banks?
- b) What is the effect of the turnaround time of a digital banking technology on commercial banks financial performance?
- c) Does the cost of adoption and operation of digital banking technology or products affect the financial performance of commercial banks in Kenya?

1.4 Significance of the study

Digital banking in Kenya is still at its early stages with a limited number of providers that are operational. There is a risk that an IT failure could interrupt services, preventing access to digital banking, limiting customer's access to their money and undermining consumer confidence in these services. Establishing a digital banking platform for banks involves a huge cost to the banks. Furthermore, the banks will have to maintain their digital banking system. Mobile banking services like M-pesa and M-shwari are part of digital services which experience frequent and prolonged delays and hence demands urgent attention. Many banks have digital banking platforms yet the banks still report mixed results where some have high performance while others are struggling, which therefore justifies the relevancy of this study in providing guidance in digital banking.

The findings of the study will help the management of commercial banks by informing them on the possible effects of digital banking on the financial performance of their organizations. In addition, by using the findings of this study, the management will be in a

position to establish a proper strategy on how to realize maximum benefits from digital banking and to know whether digital banking services are urgent or need strategic reviews.

This study will inform Kenyan commercial banks on the actual contribution of digital banking to their performance or non-performance with a view of sustaining the gains thus made and addressing any weakness that may be observed. The study will also improve not only researcher's scope of understanding but also entire public hence gain exposure to the e-banking technology.

1.5 Scope of the study

This study was undertaken in Kenya, Nairobi County where there is a high concentration of banking headquarters and branches. The study will concentrate on establishing the influence that digital banking technology has on financial performance of commercial banks with a focus on how digital banking products offered by banks, related digital banking services and consequential costs of offering such services will affect the performance of the commercial banks operating in Kenya.

This study covered the financial performance of the banks in the year 2016 to 2017 where there was high uptake of digital banking technology with varying financial results. In this study, effects of digital banking on financial statement are the dependent variables being measured through profitability.

1.6 Organization of the study

This project is structured as follows: the foregoing chapter one provides the research background, research objectives, significance of the study, scope, and the limitations

encountered in the course of the study. Chapter two presents literature review on digital banking variables affecting financial performance and a conceptual framework. Chapter three deals with the methodology employed in this study while chapter four provides the research findings and interpretation. Chapter five present the summary to the findings of the research, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature review of the study. The areas covered in this study are theoretical reviews of digital banking and bank financial performance by analyzing financial intermediation theory, innovation diffusion theory and modern economics theory. The chapter also looks at the empirical evidences that that have been performed by other researchers and any gaps in their findings to come up with a conceptual framework.

2.2 Theoretical review

This section reviews theories that will guide the study. It consists of the theories governing the performance of commercial banks in their operations. In particular, the section looks at the financial intermediation theory in relation to value creation to improve performance. It also looks at innovation diffusion theory and in addition, it reviews the modern economics theory which holds that for a business to make returns, it has to obey the modern economics.

2.2.1 Financial intermediation theory

Financial intermediation theory was introduced by Gurley and Shaw in 1960 which they based on the agency theory and theory of informational asymmetry. Financial intermediation is a process which involves surplus units depositing funds with financial institutions who then lend to deficit units (Mutua, 2013). This theory is an anchor to all the variables for the study. According to Scholtens and Wensveen (2003), the role of the

financial intermediary is essentially seen as that of creating specialized financial commodities. They emphasize that these financial commodities are created where there are market imperfections. They implied that the financial commodities were created whenever an intermediary find that it can sell them for prices which will cover all relevant costs of production as well as opportunity costs. For this case, commercial banks acts as financial intermediaries and employs digital banking technology to widen their network to obtain cheaper deposits which they can then lend at a higher interest rate to obtain favorable returns. Numerous markets are characterized by informational differences between buyers and sellers which create market imperfections.

Information asymmetries in financial markets are pronounced since borrowers understand their securities, industriousness, and integrity better than the lenders. Entrepreneurs On the other hand, possess inside information about their own projects for which they seek financing (Leland & Pyle, 1977).

2.2.2 Innovation diffusion theory

This theory was introduced by Rogers in 1962 to explain how new inventions are diffused among users over a period of time (Liu & Li, 2009). Mahajan and Peterson (1985) defined an innovation as any idea, object or practice that is perceived as new by members of the social system and defined the diffusion of innovation as the process by which the innovation is communicated through certain channels over time among members of social systems. Diffusion of innovation theory attempts to explain and describe the mechanisms of how new inventions in this case internet and digital banking is adopted and become successful (Clarke, 1995). This theory is an anchor to the first independent and variables

which explains access to digital banking as well as the turnaround time of e-banking services.

According to Dillon and Morris (1996); Rogers (1983 & 2003), the factors which influence the diffusion of an innovation include; relative advantage, compatibility, triability, observability and complexity therefore, the rate of adoption of new innovations will depend on how an organization perceives its relative advantage, compatibility, triability, observability and complexity. He further stated that resistance to change may be a hindrance to diffusion of innovation although it might not stop the innovation it will slow it down.

By analyzing Rogers (2003) diffusion of innovation theory through the lens of the Dubin framework, some gaps in the theory emerge (Lundblad & Jennifer, 2003). Organizations are described as a social system, but within organizations, departments or teams can also serve as social systems. Yet the unique issues and elements of departments or teams within a larger organizational context are not addressed in terms of how these boundaries affect the adoption of innovation. In addition, boundaries are not addressed for instances when diffusion of innovation occurs across organizations, such as between schools of a school district or hospitals and clinics within a health care delivery system (Lundblad & Jennifer, 2003). Specifically, the theory begins to describe the innovation-decision process within organizations, but not to the level of addressing whether and how the characteristics of an innovation interact to affect its adoption within organizations, or whether organizational type, size, or industry effects adoption (Ndungu, 2014). In addition, while there is an innovation-decision process described for individuals and within organizations, there is no

description of how the variables interact when innovations are diffused across organizations (Lundblad & Jennifer, 2003).

If an organization in Kenya observes the benefits of mobile and internet banking they will adopt these innovations given other factors such as the availability of the required tools. Adoption of such innovations was faster in organizations that have internet access and information technology departments than in organizations without the internet and technology.

2.2.3 Modern economics theory

Modern economics theory helps in discovering the various ways through which various expectations and decisions by individuals lead to emergence certain features of communities and societies such as rate of inflation, level of national income, productivity gains, stocks, and prices of various types of capital, cultural values, and social norms (Kithaka, 2013). This theory forms basis or anchor of the third independent variable of the study which is with regard to the cost of digital banking services.

Two factors make economic theory particularly difficult (Solmil & Shanmugham, 2003). First, individual decisions at any moment are themselves influenced by these emergent features, by past decisions learning, practice, and habit, and by future expectations. Second, the emergent features that can be well handled by existing economic theory and theory concern only fast-moving variables.

The more slowly emergent properties that affect attitudes, culture, and institutional arrangements are recognized, but are poorly incorporated. With the rise of the banking,

businesses find it easier to penetrate large network without putting up a branch. Individuals on the other hand want a better banking experience where they can devote more time to other issues other than visiting a bank for transaction. The need and expectation of banking customers to be able perform transaction wherever they are and whenever they want, and that of businesses to reduce cost of their operation has influenced digital banking. These needs lead to emergent features as explained by modern economics theory.

Tiwari, Buse and Herstatt (2006), explains that economists know that the success of achieving financial returns from fast dynamics leads to slowly emergent, nearly hidden, change in deeper and slower structures, changes that can ultimately trigger sudden crisis and surprise. However, there are complexities that may arise in that most modern economists are frustrated in their quest to understand the interactions between fast and slow moving emergent features.

2.3 Empirical literature review

Performance of commercial banks are critical to the economy, however, a number of factors are seen to affect financial performance of commercial banks. For This study performance of commercial banks was analyzed on the basis of the findings of other studies and gaps identified by the studies that need to be improved with regard to e-banking product and services, costs and performance of commercial banking.

2.3.1 Access to Digital banking technology services and performance of commercial banks

Sub-Saharan Africa has some of the lowest levels of infrastructure investment in the world. Merely 29 percent of roads are paved, barely a quarter of the population has access to electricity, and there are fewer than three landlines available per 100 people (International Telecommunication Union, ITU, 2009; World Bank, 2009 a&b). Yet access to and use of mobile telephony in sub-Saharan Africa has increased dramatically over the past decade. There are ten times as many mobile phones as landlines in sub-Saharan Africa and 60 percent of the population has mobile phone coverage (ITU, 2009). Mobile phone subscriptions increased by 49% annually between 2002 and 2007, as compared with 17 percent per year in Europe (ITU, 2008).

According to Aker and Mbithi (2010), there is a strong correlation between mobile phone coverage, the type of services offered, the price of such service, and firm performance. In markets with limited competition, profit-maximizing firms tend to offer more limited services at higher prices. Rayhan, Sohel, Islam, and Mahjabin (2012) in their study on digital banking in Bangladesh concluded that, mobile phone banking offers the potential to extend low cost virtual bank accounts to a large number of currently un-banked individuals. Mobile phone also makes access to banking and advanced payment transactions at affordable cost.

A positive aspect of digital banking technology innovation is that mobile networks can reach remote areas at low cost both to the consumer and the bank therefore enhancing the

adoption of digital banking technologies. Several studies have been conducted on the effects of digital banking and the performance of commercial banks.

In his study Tchouassi (2012) attempts to find out if mobile phones technology extends banking services to the unbanked persons using empirical Lessons from Selected Sub-Saharan Africa Countries. This study attempts to discuss the use of mobile phones to extend banking services to the poor, vulnerable and unbanked population in the society. The study notes that low- income households in Sub-Saharan Africa (SSA) countries lacked access to bank accounts and also faced high costs for performing basic financial transactions. The study thus concludes that mobile phones presented a huge opportunity for the penetration and provision of financial Services to the unbanked population. In addition to technological and economic innovation, policy and regulatory innovation was needed to make these services a reality (Ngumi, 2014). As telecommunication markets mature, mobile phones in Africa are evolving from simple communication tools into service delivery platforms (Jensen 2007; Aker, 2008; Aker, 2010; Klonner and Nolen, 2008). This has shifted the development paradigm surrounding mobile phones from one that simply reduce communication and coordination costs to one that could transform lives through innovative applications and services (Ngumi2013).

Donner and Tellez (2008) conducted a study on e-banking and economic development where they attempted to link adoption, impact, and use of digital banking. The study found out that e-banking systems could be an important innovation to the developing world by offering ways to lower the costs of moving money from place to place and offering a way to integrate more users into formal financial systems.

The study further suggests that the true measure of that importance of e-banking would require multiple studies using multiple methodologies and theoretical thoughts before answering the questions about adoption and impact. Tiwari, Buse and Herstatt (2006) did a study on digital banking as business strategy: impact of mobile technologies on customer behavior and its implications for banks. The study attempts to establish the opportunities available for banks to generate revenues by value addition, innovative e-banking services while retaining and even extending their base of technologically savvy customer's. Wambari (2009) did a case study of digital banking in developing countries using a case of Kenya. This study attempts to find out the importance of digital banking in the daily running of businesses in Kenya and the challenges in using e-banking as a business tool. The study explains that the adoption and use of mobile phones is as a result of a social process which emanates from the social practices of individuals and businesses which leads to some economic benefits.

2.3.2 Turnaround time of digital banking technology services and performance of commercial banks

One of the main concerns of e-banking services how fast it will take a customer to undertake a transaction through their mobile phone. This concern has been the experience of many customers in Kenya who were linked into the E-banking platforms to access the banking services. According to Ritho and Jagongo (2015), Before E-banking was used, and a customer had a lengthy transaction process. The customer would carry her cash to the bank location, make a queue for long at the branch, cash was counted and recorded by the teller in the customer's account. This process made the customers to spend a lot of time in

the process besides the great security risk of walking around with cash. An E-banking service enables the customers to deposit money directly from their mobile device to the respective bank accounts. The studies on the turnaround time of E-banking services have largely focused on the benefits to the customers, however, this study focus on the benefits to the commercial banks and other e-banking service providers. The studies again, do not identify the effect of the turnaround time on the financial performance of commercial banks hence leaving a gap (Ochumo, 2007)

2.3.3 Digital banking technology costs and performance of commercial banks

According to Koivu (2002) uptake of mobile phone in Kenya has been unprecedented. E-banking in Kenya affects the behavior, decision making and performance of organization and entire economy. The trend of continuously relying on mobile devices to perform monetary transaction is gaining momentum in the world.

E-banking is one invention which has gradually concentrated itself in pervasive ways of cutting across several sectors of the economy and industry. Kigen (2010) conducted a study on the impact of digital banking on transaction costs of microfinance institutions. In the study, he established that e-banking had reduced transaction costs significantly even though they were not sensed by the banks because by then there was a small digital banking customer base. Kigen (2010) attempted to assess the effects of e-banking on transactional costs of microfinance institutions.

Kingoo (2011) considered the relationship between electronic banking and financial performance of commercial banks in Kenya focusing on the microfinance Institutions in

Nairobi. Kingoo (2011) study focused on the wider electronic banking whereas this study will only concentrate on digital banking. Munaye (2009) studied the application of digital banking as a strategic response by equity bank Kenya limited to the challenge in the external environment. In his study, Munaye (2009) studied the concept of e-banking as a strategic response however, its effects on financial performance were not considered. Zimmerman (2010) established that digital banking in developing world was an object of skepticism among financial insiders while proponents argued that cell phones could revolutionize personal finance in poorer country, regulators warned of money laundering and most bankers worried that low customer balances wouldn't be worth transaction costs. From the above arguments, this study assumes that digital banking supports the delivery of e-banking services in an organization and the economy.

2.4 Summary of knowledge gap

All the literature studied shows that previous researchers only focused on a few variables or other topics of innovations while this study covers additional variables that were omitted by previous studies as summarized below:

Table 2.1: Summary of Literature Reviewed and Research Gaps

AUTHOR	STUDY	FOCUS	KEY FINDING	GAP
Donner and Tellez (2008)	Mobile banking and economic development: Linking ,adoption,	The study attempted to link adoption, impact, and use of	The study found out that e-banking systems could be an important innovation to the developing world by offering ways to lower	The study does not refer to impact of digital banking technology on financial performance of banks rather

	impact, and use	mobile banking to economic development	the costs of moving money from place to place and a way to integrate more users into formal financial systems	impact of mobile banking on economic development of a country
Wambari (2009)	Mobile banking in Developing Countries (a case study on Kenya).	This study attempts to find out the importance of mobile banking in the daily running of businesses in Kenya	The study explained that the adoption and use of mobile phones is as a result of a social process which emanates from the social practices of individuals and businesses which leads to some economic benefits	Does not tie the adoption and use of digital banking services to financial performance of the banks but rather on the customers businesses
Munaye (2009)	The application of mobile banking as a strategic response by equity bank Kenya limited to the challenge in the external environment	studied the application of mobile banking as a strategic response by equity bank Kenya limited to the challenges in the external environment	Study found out that m-banking services could be strategic tool that organization could use in response to certain challenges like competition due to technological advancement.	Studied the concept of m-banking as a strategic response, however, its effects on financial performance were not considered

<p>Aker and Mbithi (2010),</p>	<p>Mobile phones and economic development in Africa</p>	<p>Research sought to find out whether mobile phone coverage and adoption have had positive impacts on agricultural and labor market efficiency and welfare.</p>	<p>The study concluded that mobile phone technology cannot serve as the “silver bullet” for development in sub-Saharan Africa</p>	<p>The study focused on impact of mobile banking technology in the labor market and agricultural sector. It however left out the impact of other digital banking technology innovations in the banking sectors.</p>
<p>Kigen (2010)</p>	<p>The impact of mobile banking on transaction costs of microfinance institutions</p>	<p>Study focused on the impact of mobile banking on transaction costs of microfinance institutions</p>	<p>In the study established that e-banking had reduced transaction costs significantly even though they were not sensed by the banks because by then there was a small mobile banking customer base</p>	<p>The study attempted to assess the effects of mobile banking on transactional costs of micro-finance institutions. It suggested the effects of m-banking could not be sensed by banks since there was a small mobile banking customer base. This condition has changed over time</p>

Kingoo (2011)	The relationship between electronic banking and financial performance of Commercial banks in Kenya	The study looked at relationship between electronic banking and financial performance of commercial banks in Kenya focusing on the micro-finance Institutions in Nairobi	Banks need to manage costs and risks associated with electronic banking, while adopting and using IT to improve their performance and increase profitability.	The study focused on the wider electronic banking on micro-finance institutions whereas this study will only concentrate on banking institutions.
Tchouassi (2012)	Can Mobile Phones Really Work to Extend Banking Services to the Unbanked? Empirical Lessons from Selected Sub-Saharan	Attempts to find out if mobile phones technology extends banking services to the unbanked persons using empirical Lessons from	The study thus concludes that mobile phones presented a huge opportunity for the penetration and provision of financial Services to the unbanked population	This study attempts to discuss the use of mobile phones to extend banking services to the poor, vulnerable and unbanked population in the society. However it does not explain how the m-banking services performed will affect the financial

	Africa Countries	Selected Sub-Saharan Africa Countries		performances of the banks.
Mutua R, (2013)	Effect of mobile banking on financial performance of commercial banks	Effect of mobile banking on financial performance of commercial banks using secondary data in term of value of mbanking transactions and subscription level.	The study however found that there exist a weak positive relationship between mobile banking and the financial performance of commercial banks in Kenya. The study also recommends that policy makers keep a keen eye on the developments of mobile banking as it is a new platform for competition among commercial banks as the world moves into a mobile age to ensure it does not lose its regulatory role	Since this study there has been a tremendous improvement in the sector especially as the industry moves into a technologically competitive environment. The study however did not look at the cost of operation as a result of m-banking services.
Ritho and Jagongo (2015)	Mobile banking and Financial Performance of Commercial	Aims to investigate the mobile banking effects on Commercial	From the findings and summary the study concludes that the prices of E-banking services had a high positive influence on the	The study does not identify the effect of the turnaround time on the financial performance of commercial banks but

	Banks in Kenya	Banks financial performance in Kenya with focus on prices of mbanking services.	financial performance of commercial banks in Kenya	rather focuses on the security of m-banking services hence leaving a gap.
Mugodo E, (2016)	Effect of electronic banking on financial performance of commercial Banks	This study focused on effects of electronic banking on commercial banks' financial performance indicators	The study established that electronic banking has contributed positively to the financial performance of Kenya's commercial banks	The study focused associations between the return on assets and the electronic banking variables (ATM value of transactions, mobile banking value of transactions and internet banking value of transactions) however this study only focuses on mobile banking technology

Source (Researcher, 2020)

2.5 Conceptual Framework

A conceptual framework defines the interrelationships between variables deemed important in a study (Kothari, 2004). The Kenya Institute of Management (2009) further

indicates that it is within the conceptual framework where the interrelationship between the dependent and independent variables of the study are examined. This study particularly interrelates digital banking and financial performance of commercial banks in Kenya, as indicated in figure 2.1 below;

Independent variable

Dependent variable

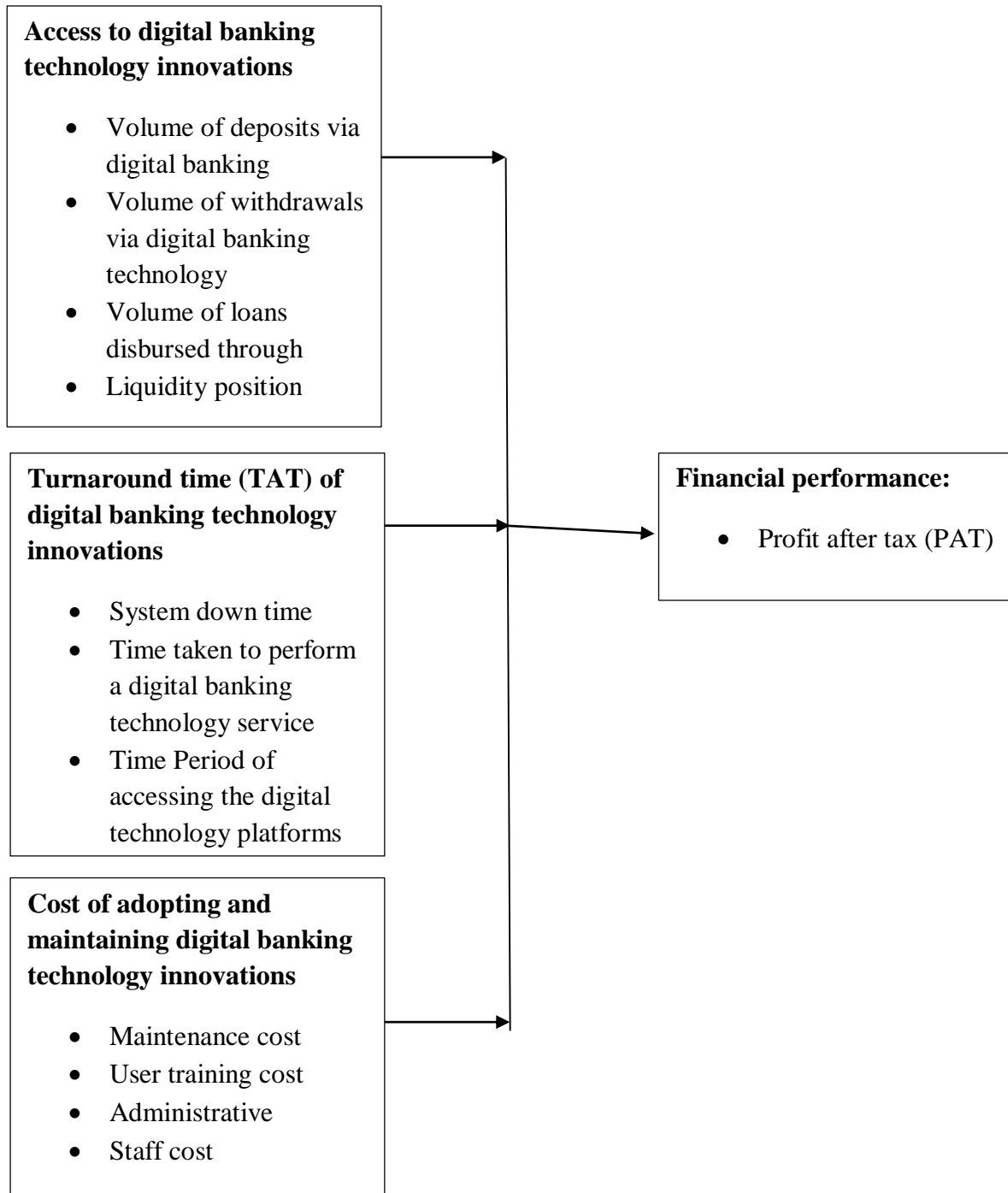


Figure 2.1: Conceptual framework

Source (Researcher, 2020)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the research methodology, target population, data collection instruments and data analysis. The chapter outlines the methodology that was used in the study and it include; research design to be employed, the survey population, sampling design, sampling size, data collection methods, instruments that were used in the data processing and analysis.

3.2 Research design

Research design are plans and the procedures for research that span the decision from broad assumptions to detailed methods of data collection and analysis (John 2009). The study will use descriptive research design and inferential statistics in analysis. Chandran, (2004) describes descriptive design as appropriate to describe and portray characteristics of an event situation and a group of people community or population. Mugenda and Mugenda (2003) describe descriptive research design as a systematic, empirical inquiry into which the researcher does not have a direct control of independent variable as their manifestation has already occurred or because the inherently cannot be manipulated. The descriptive design was applied because the study involves describing a relationship that exists between a set of variables. Descriptive research enables the study to generalize the results of the findings to a bigger population (Kithaka, 2013). The study aimed at exploring the impact of digital banking technological innovations on the financial performance of commercial banks

3.3 Study model specification

This study sought to establish the relationship between use of digital banking technology innovations and Financial Performance of Commercial Banks in Kenya. The study used a general linear analytical model relating the financial performance with the various independent factors. The study model uses profits after tax as a measure of financial performance while access to digital banking technology, turnaround time and the overall cost of digital banking technology as independent variables.

The following regression model was applied:

$$Y = \alpha + \beta_1 AM + \beta_2 TAT + \beta_3 CM + \varepsilon$$

Where: Y= Profit after tax of commercial banks

α = Constant term

$\beta_1, \beta_2, \beta_3$ =coefficients of determination of independent variables

AM= Access to digital banking technology innovations

TAT = Turnaround time of digital banking technology innovation

CM = Costs of digital banking technology innovations

3.3.1 Operationalization and measurement of Variables

For the purpose of this study, only profit after tax was considered as the measure of performance of the banks. The response variable is quantitative and can be measured

through scale. The independent variables include numerical variables. Below table shows summary of data operationalization for the study.

Table 3.1: Data Description

Variable	Type	Indicators	Measurement
Performance of commercial banks.	<ul style="list-style-type: none"> • Dependent 	<ul style="list-style-type: none"> • Profit after tax 	Scale of 1-5
Access to digital banking technology	<ul style="list-style-type: none"> • Independent 	<ul style="list-style-type: none"> • Volume of deposits via digital banking technology • Volume withdrawals via digital banking technology • Volume of loans disbursed through digital banking platforms • Liquidity position due to digital banking 	Scale of 1-5
Turnaround time (TAT) of digital banking technology	<ul style="list-style-type: none"> • Independent 	<ul style="list-style-type: none"> • System down time • Time taken to perform a digital banking technology based service • Time Period of accessing the digital technology platforms 	Scale of 1-5
Cost of adopting and maintaining digital banking technology innovations	<ul style="list-style-type: none"> • Independent 	<ul style="list-style-type: none"> • Maintenance cost • User training cost • Administrative cost • Staff cost 	Scale of 1-5

Source (Researcher, 2020)

3.4 Location of study

The study was carried out in Kenya, Nairobi County, on all the listed commercial banks. The study considered Nairobi County as the best location because all the banks in Kenya have their headquarters in Nairobi. This is also the best location where a number of the bank's employees are housed and the information required would be easily available for them.

The Kenyan banks have grown tremendously over the past 5 years into the east African region as reported CBK annual report (2016). They however remain headquartered in Nairobi with various branches in Kenya and subsidiaries in other East African economies. With these in mind, it is practical to consider this location for the study.

3.5 Target population

Mugenda and Mugenda (2003) define population as an entire group of individuals, events or objects having a common observable characteristic. As at 30th September 2019, Kenya banking sector comprised 42 commercial banks (central bank of Kenya, 2019), 39 of which were operational and 3 other banks were under receivership. Table 3.2 shows the population by ownership and Assets base.

Table 3.2: Ownership and Asset Base of Commercial Banks (Kshs. M)

Source (CBK, 2020)

Ownership	Number	% of Total	Total Net Assets	% of Total
Local Public Commercial Banks	3	7.70%	145,451	3.90%
Local Private Commercial Banks*	23	59.00%	2,406,742	65.10%
Foreign Commercial Banks	13	33.30%	1,143,751	30.90%
Total	39	100.00%	3,695,943	100.00%
Fidelity Commercial Bank, undergoing acquisition, Imperial Commercial Bank & Chase Bank that are in receivership have been excluded				

From the population Table 3.2 above, three banks were local public commercial banks, 23 local private commercial banks while 13 were foreign banks. There were two banks, which were under receivership at the time, and one bank, which was undergoing an acquisition. These three banks fall under local private category.

The target population was all the 42 commercial banks operating in Kenya according to the central bank supervision report where two respondents from IT and finance department in each bank were picked.

3.6 Sampling strategy

The study adopted a census of all the commercial banks in Kenya from a population of 42 Commercial banks as reported by Central bank of Kenya in 2019. This information is found in the Central Bank of Kenya database. The specific unit of observation of the study were 84 staff members drawn from the 42 banks working at the headquarters. This group is carefully selected to be representative of the whole population with the relevant

characteristics (Mugenda and Mugenda, 1999). From this population, two respondents were purposively picked for each bank from IT and finance departments.

3.7 Data collection instrument

A questionnaire was used in accordance with the main themes of the study to obtain primary data. The questionnaire used was structured to ensure uniformity of responses and contained both open ended and closed ended questions. The questionnaire had 2 sections; one dealing with general information on the participants, and section two which seeks information on the factors affecting Digital banking, profitability and to what extent. The questionnaire was presented in the form of statement of Five-point Likert scales with ends starting from no extent to a very great extent for respondents to score statements that described the extent to which the independent measures of digital banking technology affected financial performance of commercial banks.

3.8 Data collection procedure

To get important information in this study, the researcher used both secondary and primary data. Secondary data provides us with a theoretical background to the research problem and was obtained from past studies, journals, books and reports. The primary data was collected using appropriate research instruments mainly through administration of questionnaires and interviews to the respondents from the different commercial banks. The questionnaires were taken to the relevant respondents by the researcher by visiting the relevant bank offices.

3.9 Pilot study

Pilot study was carried out prior to data collection to a pilot group of 12 respondents from selected commercial banks to ensure validity and reliability of the results.

3.9.1 Validity test

Validity is the accuracy and meaningfulness of data collection tools Mugenda and Mugenda (2003). One of the main reasons for conducting a pilot study is to ascertain the validity of the questionnaire. The study used both face and content validity to ascertain the validity of the questionnaires. As a check on face validity, test/survey items were sent to the pilot group to obtain suggestions for modification (Rousson, Gasser and Seifer, 2002). Content validity draws an inference from test scores to a large domain of items similar to those on the test. Content validity is concerned with sample-population representativeness. Gillham (2008) stated that the knowledge and skills covered by the test items should be representative to the larger domain of knowledge and skills. To ensure the validity of the data collected, the researcher colleagues and the researcher supervisor reviewed the questionnaire. In addition to that, the researcher ensured that all the respondents understood what each question was asking to improve on the quality and accuracy of the feedback and reduce on misunderstanding and inconsistencies. Researcher also sought the opinions of experts in the field of study to establish and improve the content validity of the data that was collected.

3.9.2 Reliability test

In order to ensure Reliability of the questionnaire, the questionnaire was evaluated before administration of the instrument to the pilot group of 12 respondents from selected commercial banks. In order to ensure reliability of the measurement instrument, a pilot study was done at commercial Bank of Africa, where 12 staff members mainly from the back office departments like enterprise risk, finance and operations participated and filled the questionnaire. The data was compiled and analyzed to test the scale for internal consistency using the techniques Cronbach's alpha. The value of Cronbach's alpha obtained (0.67) indicated a high level of internal consistency for the study scale. For this study a construct composite reliability co-efficient (Cronbach alpha) of 0.6 or above, for all the constructs, was considered adequate for this study.

3.10 Data analysis

After collecting data from field, the researcher performed a data clean up to ensure that questions have been properly answered and consistent. Data clean up involves editing, coding, and tabulation in order to detect any anomalies in the responses and assign specific numerical values to the responses for further analysis (Sifuma, 2014). The data is then coded and checked for any errors and omissions (Cooper & Schindler, 2003).

The data collected were both quantitative and qualitative. This data was analyzed by means of descriptive and inferential statistics. The data analysis was processed with help of a computer Statistical Package for Social Sciences (SPSS) program; this generates quantitative reports through tabulations, percentages, and measure of central tendency. The

data was subjected to a regression analysis to measure the relationship between the various digital banking technology and performance of commercial banks. Regression model used for inferential is defined by the regression equation below:

$$Y = \alpha + \beta_1 AM + \beta_2 TAT + \beta_3 CM + \varepsilon$$

Where: NP= Net profit of commercial banks

α = Constant term

$\beta_1, \beta_2, \beta_3$ =coefficients of determination of independent variables

AM= access to m-banking services

TAT = Turnaround time of m-banking services

CM = Costs of M-banking services

The results of the study were presented using tables and graphs. In addition, the data was analyzed using the presentational tools such as frequency distribution tables, measures of central tendencies' which include the mean and standard deviation and the same are also used to generalize, draw conclusions and recommendations from the data.

CHAPTER FOUR
EMPERICAL RESULTS, PRESENTATION, INTERPRETATION AND
DISCUSSION

4.1 Introduction

This chapter presents the empirical results, presentation, interpretation and discussions of the findings. The data was analysed on the basis of research objective, which involved establishing how digital banking technology innovations had influenced financial performance of commercial banks in Kenya. The chapter starts with response rate followed by descriptive statistics on the objective variables and concludes with a regression analysis on the variables.

4.2 Response Rate

The researcher administered questionnaires to 84 respondents in 42 banks. The result of the respondents who successfully completed and the returned questionnaires was summarized in table 4.1 below.

Table 4.1: Frequency table for Response rate

Responses	Frequency	Percentile
Effective response	62	74%
Ineffective response	22	26%
Total	84	100%

Source: Research data (2020)

From table 4.1 above; 62 respondents constituting 74% of the responses were received and were assessed to be effective for the research. The remaining 22 responses constituting 26% of the respondents contained part of the responses, which were not received or were received but not all questions were answered effectively to the satisfaction of the researcher. The above response rate was further summarized in figure 4.1 below.

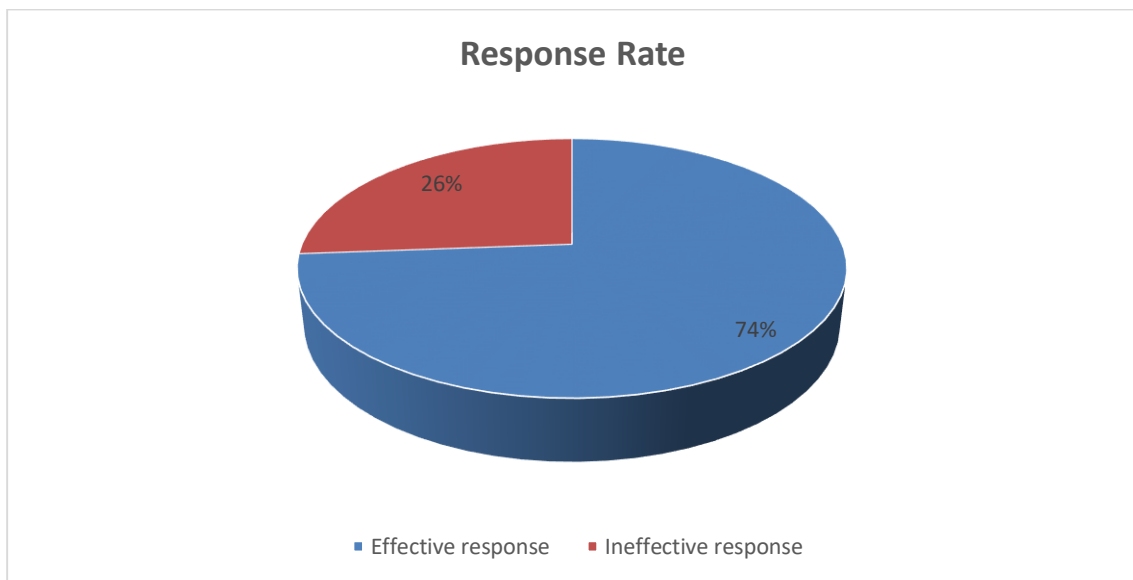


Figure 4.1: Response rate

Source: Research data (2020)

Based on the analysis, the response rate was 62 out of the expected 84 responses which represent 74% of the total expected responses while non-response were 26%. According to Ibid (2007), for those studies carried out at the organizational level, the appropriate response rate is between 35% – 40%. According to Wimmer and Dominick (2006), a response rate of 21% – 70% is acceptable for self-administered questionnaires since it guarantees accuracy and minimizes bias. Mugenda and Mugenda (2003) noted that a response rate of 50 percent is adequate, 60 percent is good with 70 percent being rated as

very good. Therefore, the above response rates met this criterion and it was appropriate for the study. From the results, the response rate of 74% was high compared to non-response of 26%.

Responses from the firms under receivership were not received even though the questionnaires were dropped, this forms part of the non-response group. The researcher observed that these firms were not very active in the market and therefore their omission would not affect the results of this study. All the responses that were not adequate were omitted from the analysis.

4.3 Descriptive Results

This is the analysis of the combined data from all the respondents drawn from the commercial banks. The descriptive results describes the relationship that exist between independent and dependent variables. The descriptive analysis was performed to enable the study to generalize these findings on whether the access to digital banking, turnaround time and cost would influence the performance of commercial banks in Kenya.

The first step of analysis of a multivariate data is a table of mean and standard deviation.

The descriptive results of the variables were represented in table 4.2 below.

Table 4.2: Descriptive statistics results

	Mean	Std. Deviation
Volume of deposit in the bank increased due to digital banking technology	4.0968	0.86289
Volume of withdrawals in the bank due to digital banking technology	3.9839	0.81967
The volume of loans and advances due to digital banking	3.7419	0.84805
Liquidity position in the bank due to digital banking services	3.5161	84430
Effects of volume of deposits and withdrawals on financial performance	3.48387	0.78389
Effect of volume of loans on financial performance	3.37097	0.72956
Digital banking loss as a result of system failure and downtime	3.4677	0.84383
Digital banking speed-time taken to perform digital transaction	4.1129	0.889
Time period of access to digital banking platforms	4.3226	0.71916
Digital banking technology has increased efficiency in service delivery	3.7742	0.71102
Extent to which time period of access of digital platform will lead to increase in profits	4.32258	0.71916
Extent to which speed of performing digital transaction led to increase in profits	4.1129	0.889
Extent to which digital technology system failures and downtime affect the profitability	3.46774	0.84383
Adoption of digital banking has reduced operating and maintenance cost for the bank	3.5323	0.88183
Digital banking technology has helped reduce staff cost	3.1129	0.8119
Digital banking technology use has led to reduction in user general administrative expenses	3.0645	0.74374
It is expensive to onboard digital banking technology due to higher user training cost	3.0323	0.80912
Overall profit of the bank has increased due to digital banking transaction	3.4032	0.77797

Source: Research data (2020)

4.3.1 Access to Digital banking technology innovation and financial performance

The first objective of the study was to determine the effect of access to digital banking technology innovations on financial performance. A number of factors were used to evaluate the effects of digital banking technology on financial performance of commercial banks. Among them was on volume of deposits, volume of withdrawals, liquidity position and volume of loans.

4.3.1.1 Volume of deposits through digital banking technology channels

The respondents were asked to indicate to what extent the adoption of digital banking technology increased the volume of deposits in the bank. This was important in determining the influence of digital banking technology on financial performance since deposits improved liquidity positions of the banks. The responses were summarized in the table 4.3.

Table 4.3: Volume of deposits through digital banking technology channels

Volume of deposit in my bank has increased due digital banking technology	Frequency	Percent%
not at all	2	3.2
little extent	0	0.0
moderate extent	8	12.9
great extent	32	51.6
very great extent	20	32.3
Total	62	100

Source: Research data (2020)

From the table above, it was noted that 51.6% of respondents agreed that the use digital banking improved their key deposits to a great extent (mean=4.0968, SD=0.86289) while 32.3% agreed that deposits had increased to a very great extent, 12.9% of the respondents felt that the deposits increased to a moderate extent and 3.2% did not feel that their deposits had improved at all.

The above findings agree with CBK Bank supervision report (CBK,2017) which indicated that Customer deposits increased by 10.75 percent from Ksh.2.62 Trillion in December 2016 to Ksh.2.90 Trillion in December 2017 attributed to increased deposit mobilization by banks as they expanded their outreach and leveraged on digital platforms.

4.3.1.2 Volume of withdrawal through digital banking technology channels

The respondents were further asked to indicate to what extent the digital banking technology innovations increased the volume of withdrawal in the bank. This was important in determining the influence of digital banking technology innovation on financial performance since withdrawal decreases liquidity positions of the banks. The responses were summarized in table 4.4 below.

Table 4.4: Volume of withdrawals through digital channels

Volume of withdrawals through digital banking technology in my bank has increased due to	Frequency	Percent %
not at all	1	1.6
little extent	1	1.6
moderate extent	12	19.4
great extent	24	38.7
very great extent	24	38.7
Total	62	100

Source: Research data (2020)

From the above finding, majority (38.7%) also agreed that by using digital-banking technology, withdrawals levels increased to a very great extent (Mean=3.9839, SD=0.81967) and similar number also agreed that withdrawals levels increased to great extent, 19.4% of the respondents felt that withdrawals increased to a moderate extent while 1.6% felt that it did increase to a little. Lastly, 1.6% agreed that withdrawals level did not increase at all.

The results showed that most customers had adopted the digital banking technology to perform their banking services like withdrawal of cash. This finding was similar to that of by Okiro and Ndungu (2015) in their study on impact of mobile and internet banking on performance of financial institution, where they observed that cash withdrawal is the most common mobile money transaction carried out by customers whereas commodity purchase is the least common transaction.

4.3.1.3 Value of loans disbursed through digital banking technology channels

The respondents were asked to rate extent digital banking technology innovation improved value of loans disbursed from a scale of 1 to 5. The results were summarized are in Table 4.5.

Table 4.5: Value of loans through digital channels

The value of loans and advances in my bank has increased	Frequency	Percent %
not at all	1	1.6
little extent	1	1.6
moderate extent	23	37.1
great extent	25	40.3
very great extent	12	19.4
Total	62	100

Source: Research data (2020)

From the table, 40.3% agreed that value of loan improved to a great extent (Mean=3.7419, SD=0.84805), 37.1% of the respondents agreed that value of loans improved moderately, 19.4% felt the value of loans improved to a very great extent whereas only 1.6% felt that it improved to a little extent, however, 1.6% felt that value of loans did not increase at all.

It was noted that not all banks which participated in the survey were providing loans through the digital channels but provided other digital banking financial services. Vaidya, (2011) indicated that digital banking had increased provision of financial services with a wider choice of services geared to all levels of society. According bank supervision report

(CBK,2018), Since the launch of the M-Shwari platform in 2012, a vast number of platforms offering similar services have emerged, as at December 2018, there were 7 million active mobile phone loan accounts valued at over Ksh.60 billion, corresponding to 97.49 percent and 2.41 percent of total industry loan accounts numbers and values respectively.

4.3.1.4 Digital banking technology innovation on liquidity position

The respondents were asked to rate extent to which digital banking technology innovation improved the liquidity position of the bank. This question was important as a follow up question to volume of deposits, withdrawals and value of loans disbursed to check for consistency. The results were summarized in Table 4.6 below.

Table 4.6: Liquidity position

There is increased liquidity position due to digital banking technology innovation	Frequency	Percent %
not at all	1	1.6
little extent	3	4.8
moderate extent	29	46.8
great extent	21	33.9
very great extent	8	12.9
Total	62	100

Source: Research data (2020)

Majority of respondents (46.8%) agreed that the digital banking technology had improved banks liquidity position moderately (mean grade 3.5161, SD=0.8443), 33.9% agreed that digital banking technology had improved banks liquidity position to a great extent, 12.9%

of the respondent felt that it improved liquidity position to very great extent, 4.8% of the respondents felt that it improved to a little extent while only 1.6% did not agree that it improved the liquidity position.

These results indicate that use of digital banking technology innovation has a moderate influence in liquidity positions of banks since the technology opens up new channels through which customers can access the banking services. According banking supervision report(CBK,2017), the banking sector average liquidity ratio as at December 2017 stood at 43.7 percent as compared to 40.3 percent registered in December 2016. The increase in the ratio is mainly attributed to a higher growth in total liquid assets compared to the growth in total short-term liabilities.

4.3.1.5 Access to digital banking technology aspects on financial performance

The respondents were asked to rate the extent of influence by the aspects of digital banking technology innovations on the profitability of their bank. The findings were tabulated as shown in the table 4.6 below.

Table 4.7: Effects of access to digital banking technology aspects on financial performance

	Not at all	little extent	Moderate extent	Great extent	Very great extent
Digital banking deposits and withdrawals	0.0%	4.8%	54.8%	27.4%	12.9%
Digital banking value of loans	1.6%	4.8%	53.2%	35.5%	4.8%

Source: Research data (2020)

According to the findings, the 54.8% of respondents indicated with a mean of 3.48 that deposits and withdrawals services through digital channels influence the profitability of their bank to a moderate extent. In addition, 53.2% respondents indicated with a mean of 3.37 that value of loans through the digital banking channels influence the profitability of their bank to a moderate extent.

The above result implies that access to digital banking technology innovations is likely to influence profitability of the bank by deepening financial inclusion and increasing the volume and value of transaction. In her study, Wawira (2011) found that financial services accessibility by customers through banking agencies had a positive impact on financial performance of commercial banks in Kenya. These results were also reflected in the financial sector stability report (CBK, 2017) which reported that Mobile money continues to deepen financial inclusion, with the number of subscribers to mobile money services increasing to 37.4 million in 2017 from 35 million in 2016 and the values transacted through the mobile money platform grew by 8 percent in 2017 compared to 19 percent growth rate in 2016.

4.3.2 Turnaround time and financial performance

This variable was important in measuring the efficiency of the digital services offered by the banks. It was measured by submitting questions that related to time period of accessing the platform, speed of performing a transaction and losses as a result of failure or down time. These sub variables are discussed below.

4.3.2.1. Loss as a result of failure and system down time

The respondents were asked to express to what extent digital banking platform failures and system downtime will result into a loss and the views were summarized in figure 4.2 as follows;

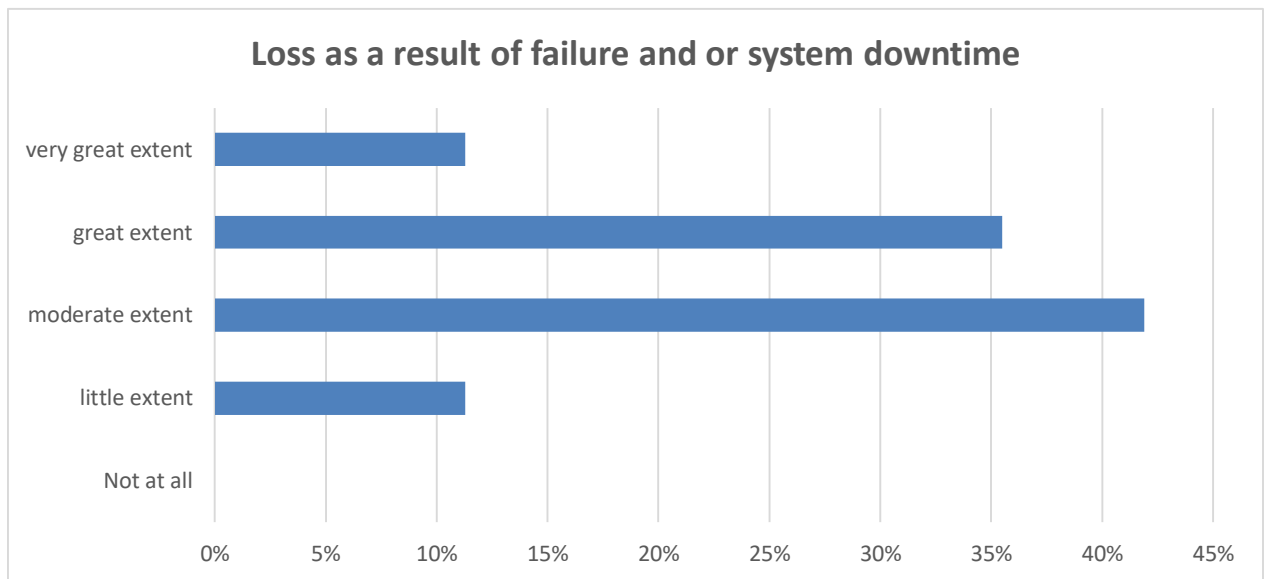


Figure 4.2: loss as a result of failure and system downtime

Source: Research data (2020)

From the above graph, 42% of the respondent felt that the Loss as a result of failure of digital banking platform would be moderate as it's recoverable, 39% said that the loss would be to a great extent, 11% were of the respondents felt that the loss would of great extent and little extent but non thought that there would be no loss at all.

These result indicated that losses as a result of system failure or downtime will affect the bank moderately as they were recoverable to some extent and this will impact performance compared to non-digital channels.

4.3.2.2 Time taken to perform a digital banking technology based service

Respondents were asked whether it takes shorter time to perform a transaction through digital technology compared to the banking hall. This was an important question for the respondents because it was crucial to find out the efficiency of the digital platforms. The results are illustrated in figure 4.3 below

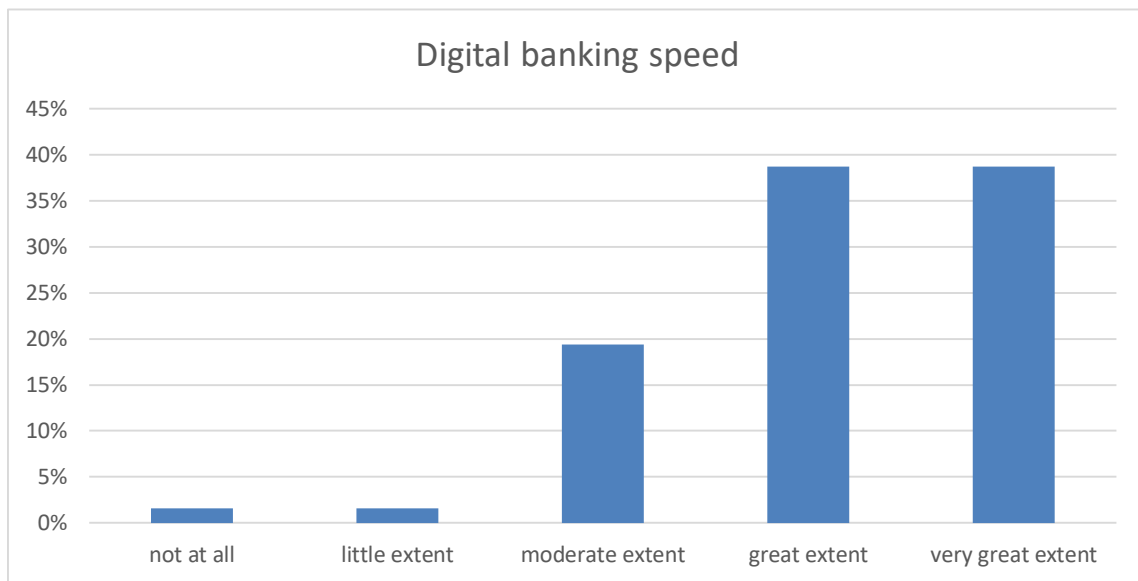


Figure 4.3: Digital banking transaction speed

Source: Research data (2020)

Majority of the respondents (38.7%) agreed that digital banking service was faster than banking hall to a very great extent, equally 38.7% of the respondents agreed that digital banking services was faster than banking hall to a great extent, 19.4% thought that digital banking technology was faster than banking hall to a moderate extent and only 1.6% felt that digital technology was faster than banking hall to a little extent or not at all.

This result indicates that digital technologies are changing the way financial institutions interact with their customers by moving from the common banking hall interactions to digital platforms due to the customer's preferences.

4.3.2.3 Time period of access to digital banking technology platform

The respondents were asked whether digital banking platform can be accessed all the time for 24hrs and the responses were summarized in the figure 4.4 below.

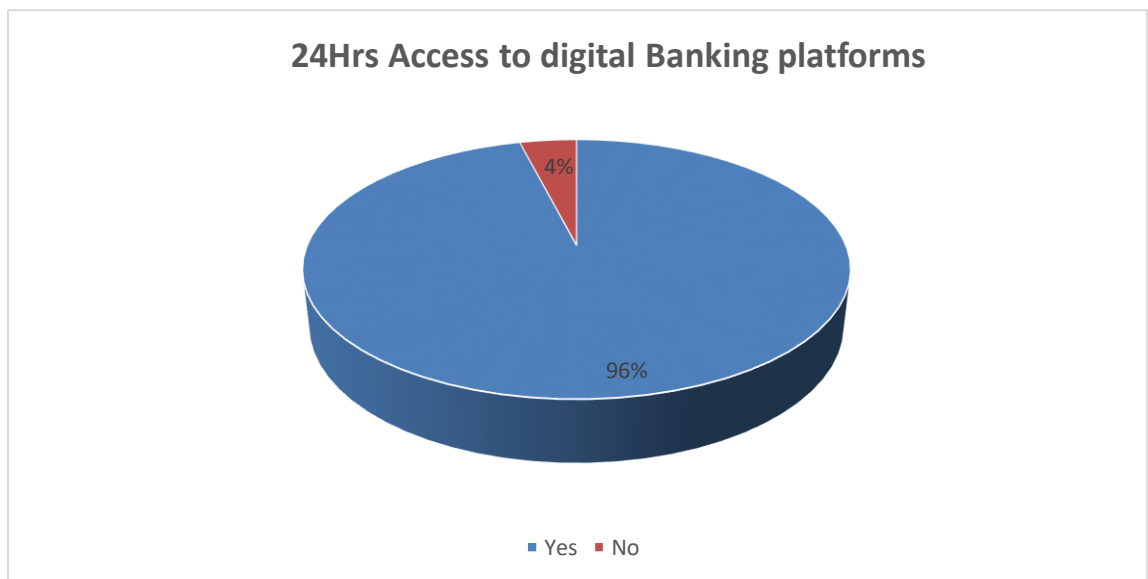


Figure 4.4: 24hrs Access to Digital banking platform

Source: Research data (2020)

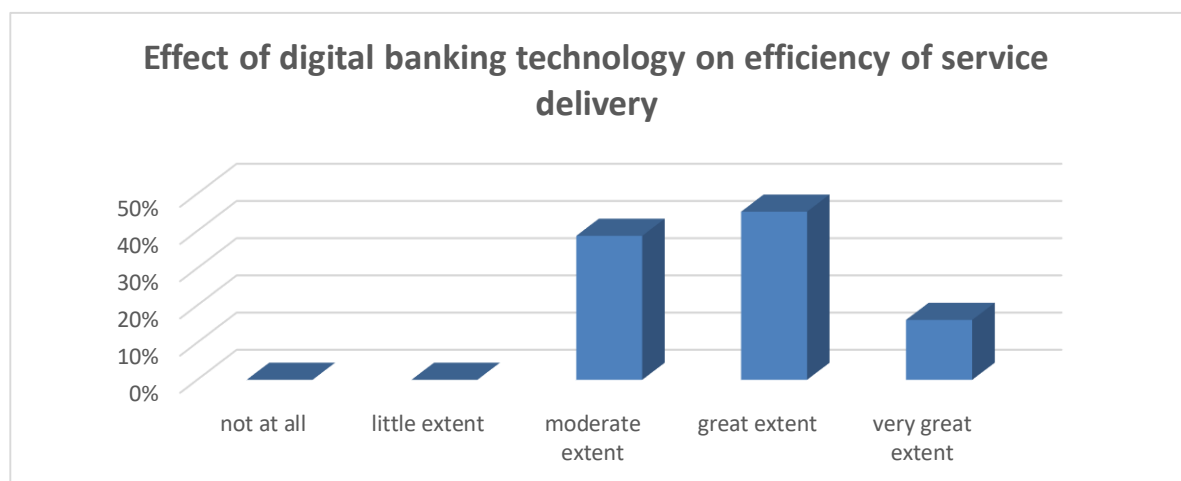
From the figure, 96% of respondents agreed that the platform is accessible anytime of the day and only 4% thought otherwise. This result show that the banks have put in place a platform that can be accessed anytime of the day at the convenience of the customer so that their transactions are not hindered thus improving level of access.

The result relates with the 2019 Fin Access Household Survey by CBK (CBK, 2019) which found that Overall access to formal financial services and products improved to 82.9 percent in 2019 from 75.3 percent in 2016. These developments could be attributed to the introduction of mobile financial services, followed by increased partnerships and innovations such as mobile banking, agency banking, digital finance and mobile apps.

4.3.2.4 Digital banking technology efficiency

This questionnaire was purposed to find out whether digital banking technology innovation improved on the level of efficiency of banks in terms of operations. The respondents were therefore, asked to indicate to what extent the level of bank service delivery had improved as a result of digital banking technology innovations on a Likert scales of 1 to 5 where Very great extent (=5), Great extent (=4), moderate extent (=3), little extent (=2) and no at all (=1) were used. The results were summarized in figure 4.5 the below.

Figure 4.5: effect of digital banking technology on level of efficiency in service delivery



Source: Research data (2020)

From the figure, the majority making up 45% of respondents agreed that the service delivery efficiency had improved to a great extent, 39% believed that service delivery had improved to a moderate extent while 16% thought that the efficiency improved to a very great extent.

The above finding shows that in general digital banking technology innovations enabled commercial banks to improve on the level of operation efficiency by reducing the human interaction levels between the customer and bank officers. These findings were also indicated by Ritho and Jagongo (2015) in their study of mobile banking and financial performance where they noted that the adoption of e-banking banking has enhanced performance of commercial banks due to increased efficiency, effectiveness and productivity. The results were also reflected in CBK banking supervision report (CBK, 2017) which reported that on average, in 2016, one employee was serving 1,222 customers whereas in 2017 an employee was serving 1,544 customers. This shows increased efficiency in customer service as a result of banks embracing technology.

4.3.2.5 Digital banking technology turnaround time aspects and financial performance

The respondents were asked to rate the extent to which the stated aspects of turnaround time will lead to increase in profitability of their banks. The results were tabulated in table 4.7 below.

Table 4.8: Digital banking technology turnaround time aspects and financial performance

	Not at all	little extent	Moderate extent	Great extent	Very great extent
Time Period of accessing the digital technology platforms	0.0%	0.0%	14.5%	38.7%	46.8%
Time taken to perform a digital banking technology based service	1.6%	1.6%	19.4%	38.7%	38.7%
Digital banking technology failure and system down time	0.0%	11.3%	41.9%	35.5%	11.3%

Source: Research data (2020)

According to the findings, 46.8% the respondents reported with a mean of 4.32 that time period of accessing the digital banking technology platforms influence the profitability of their bank to a very great extent. In addition, 38.7 of respondents indicated with a mean of 4.11 that time taken to perform a digital channel transaction would influence the profitability their bank to a very great extent. Lastly, 41.9% of respondents reported with a mean of 2.53 that system failures and downtime influenced the profitability of their bank moderately.

These findings are reflected in that of Mwangi (2013) who established that automation of processes enhanced customer service delivery, reduced cost inefficiency, led to bank expansion and contributed to increased profitability of commercial banks.

4.3.3 Cost of digital banking technology innovations and financial performances

The cost variable was measured by submitting questions that related to various aspects of cost related to digital banking technology innovations such as operation and maintenance cost, staff cost, general administration cost and user training cost. The results of these aspects of cost are discussed below.

4.3.3.1 Digital banking technology has reduced operation cost for the bank

The respondents were asked to express to what extent digital banking technology innovations reduced the operation cost of the banks. Table 4.9 below summarizes the respondent's views towards the cost.

Table 4.9: Digital banking technology innovations and bank's operation cost

		Frequency	Percent
Digital banking technology has reduced operating cost for the bank	not at all	3	4.8%
	little extent	2	3.2%
	moderate extent	21	33.9%
	great extent	31	50.0%
	very great extent	5	8.1%
Total		62	100%

Source: Research data (2020)

From the table above, it is noted that majority of the respondents representing 50% agreed that the use digital banking reduced operating cost to a great extent (mean=3.5323, SD=0.88183). On the other hand, 33.9% agreed that the use digital banking reduced operating cost to a moderate extent. In addition, 8.1% of the respondents indicated agreed

that the use digital banking reduced operating cost to a very great extent and 4.8% of the respondent agreed that the use digital banking reduced operating cost to a little extent. Lastly, 4.8% of respondents agreed that the use digital banking did not reduced operating cost.

These results indicate that adoption digital banking technology innovations such as electronic banking, mobile banking and internet banking enabled the banks to reduce their costs and improve their financial performance to a moderate extent. Kumar (2010) on his study of Micro Finance and Mobile Banking noted that financial institutions can significantly lower their costs through m-banking services.

4.3.3.2 Digital banking technology has reduced staff cost for the bank

The respondents were required to respond to questions relating to how digital banking technology has influenced the banking cost and the results were tabulated in table 4.10.

Table 4.10: Digital banking technology innovations and bank’s staff cost

		Frequency	Percent
Use of digital banking technology innovations have helped reduce staff cost	not at all	2	3.2%
	little extent	8	12.9%
	moderate extent	36	58.1%
	great extent	13	21.0%
	very great extent	3	4.8%
Total		62	100%

Source: Research data (2020)

From table 4.10, Majority (58.1%) of the respondents felt that digital-banking technology reduced staff cost to a moderate extent (Mean=3.1129, and Standard Deviation of 0.8119.21),21% of the respondents agreed that digital banking technology reduced staff cost to a great extent,12.9% of respondents felt that it reduced staff cost to a little extent while 4.8% agreed that digital banking technology reduced staff cost to a very great extent. Lastly, only 3.2% of the respondents felt that digital banking technology had no influence on staff cost.

The finding imply that digital banking technology is used to replace human capital by reducing interaction level between customer and a bank officer. Furthermore, digital transformation has enabled banks to provide services to customers directly without the need of a banking officer stationed in the hall and therefore reducing the staff cost that would otherwise be uncured. The staff cost however does not change significantly since they bank officer are assigned new within the bank.

4.3.3.3 Digital banking technology has reduced general administration cost for the bank

The respondents were further asked to indicate to what extent the use of digital banking technology innovations had led to reduction in general administrative costs on a Likert scales of 1 to 5 where Very great extent (=5), Great extent (=4), moderate extent (=3), little extent (=2) and no at all (=1) were used. The results were summarized in table 4.11 below.

Table 4.11: Digital banking technology and bank’s general administration cost

		Frequency	Percent
Use of digital banking technology innovation has led to reduction in general administrative expenses	not at all	2	3.2%
	little extent	6	9.7%
	moderate extent	43	69.4%
	great extent	8	12.9%
	very great extent	3	4.8%
Total		62	100%

Source: Research data (2020)

From the findings, 69.4% of the respondents felt that use of digital banking technology led to decrease in general administrative expenses to at a moderate extent (mean grade 3.0645, SD=0.74374) while 12.9% felt that the administrative expenses reduced to a great extent.9.7% felt that the cost reduced to a little extent, 3.2% of the respondents felt that cost did not reduce, while only 4.8% felt that the cost decreased to a very great extent.

These findings indicate that adoption of digital banking technology would reduce the administrative cost moderately by replacing costs such travel costs to customers, stationary and printing costs. It was noted that most banks provide paperless account statement due to digital banking technology which significantly reduced their mailing and stationary cost. In another study, Wawira (2011) also found that low transaction costs through agency banking had a positive impact on the financial performance of commercial banks in Kenya.

4.3.3.4 Digital banking technology has higher user training cost

The respondents were asked to indicate to what extent they felt that on boarding a digital banking technology innovations was expensive due to higher user training costs on a Likert scales of 1 to 5 where Very great extent (=5), Great extent (=4), moderate extent (=3), little extent (=2) and no at all (=1) were used. The results were summarized in table 4.12 below.

Table 4.12: Digital banking technology and users training cost

		Frequency	Percent
It is expensive to onboard digital banking technology innovations due to higher user training cost	not at all	2	3.2%
	little extent	9	14.5%
	moderate extent	40	64.5%
	great extent	7	11.3%
	very great extent	4	6.5%
Total		62	100%

Source: Research data (2020)

From the findings, majority of the respondent representing 64.5% (Mean=3.7419, SD=0.84805) felt that digital banking technology was expensive due to higher user training cost to a moderate extent. There were 14.5% of the respondents who felt that it was expensive to onboard digital banking technology to a little extent, 11.3% agreed that it was expensive to onboard digital banking technology due to user training cost to a great extent while 6.5% agreed that it was expensive to a very great extent. However, only 3.2% felt that it was not expensive to onboard digital banking technology due to high user training cost.

The above finding shows that it is expensive to onboard a digital banking technology innovation to a moderate extent since the banks will have to incur some cost related to user trainings and this will impact their financial performance.

4.3.3.5 Benefits of digital banking technology in my bank far outweigh the cost

The respondents were required indicate the extent to which they felt that the benefits realized from digital banking technology were greater than the cost associated with digital banking technology on a Likert scale of 1-5. The responses were summarized in the figure 4.6.

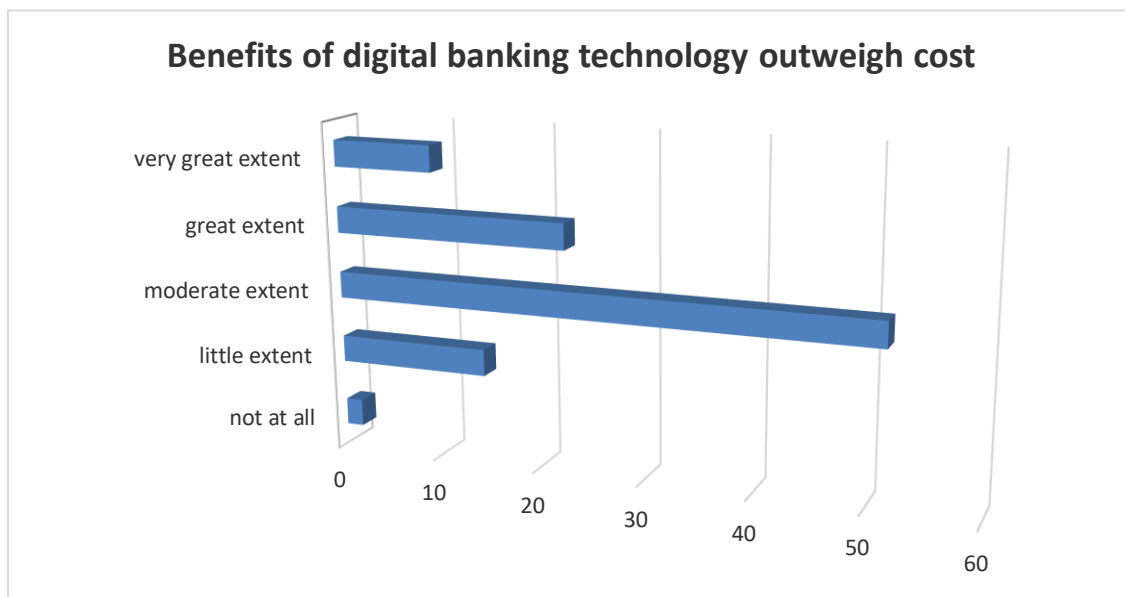


Figure 4.6: Benefits of adopting digital banking technology innovations outweigh the cost

Source: Research data (2020)

According to the findings, 51.6% the respondents felt that the benefits far outweighed the cost to a moderate extent, 22.6% the respondents felt that the benefits far outweighed the

cost to a great extent, 9.7% the respondents felt that the benefits far outweighed the cost to a very great extent, 14.5% the respondents felt that the benefits far outweighed the cost to a little extent while 1.6% the respondents felt that the benefits did not outweigh the cost.

The results indicate that in as much as it is expensive to adopt digital banking technology innovations due to related costs, the benefits that the bank reap from this technology is greater than the cost to a moderate extent.

4.3.3.6 Cost of digital banking technology innovation aspects and financial performance

The respondents were also requested to indicate how the stated costs influenced the profitability of their bank in a scale of 1 to 5 where 1 was not at all, 2 was to a little extent, 3 was moderate extent, 4 was a great extent and 5 very great extents. Table 4.13 below gives summary of the results.

Table 4.13: Cost of digital Banking technology aspects and financial performance

	Not at all	little extent	Moderate extent	Great extent	Very great extent
Operating and maintenance cost	0.0%	0.0%	56.7%	28.0%	15.3%
staff cost	0.0%	0.0%	63.3%	18.3%	18.3%
General administrative cost	0.0%	0.0%	61.7%	16.6%	21.7%
User training cost	0.0%	0.0%	58.3%	30.0%	11.7%

Source: Research data (2020)

According to the findings, 56.7% the respondents indicated with that operating and maintenance cost affects the profitability of their bank moderately. In addition, 63.3% of

the respondents indicated that staff cost affects the profitability of their bank moderately. Further, majority of the respondents at 61.7% reported that general administrative cost affects the profitability of their bank moderately. Lastly, 58.3% of the respondents indicated that user training cost influences the profitability of their bank the profitability to moderate extent.

These results indicate that the cost related to digital banking technology innovations influence the profitability of the banks and therefore need to be considered when adopting this technology. These result were also found by Kingoo (2011) in his study of electronic banking and financial performance where he indicated that the Banks need to manage costs and risks associated with

Electronic banking, while adopting and using IT to improve their performance and increase profitability.

4.3.4 Financial performance

This variable was measured by asking question that related to whether there was an increase in income due to digital banking technology, whether overall profit increased due to digital banking technology and profit attributable to digital banking. These and other sub variables were analyzed below.

4.3.4.1 Digital banking technology alerts have helped to minimize frauds

The respondents were asked to indicate to what extent they felt digital banking technology alerts helped the bank to minimize frauds related losses on a Likert scale of 1-5 where 1

represent not at all and 5 represent to a very great extent. The feedback was summarized in the figure 4.7 below.

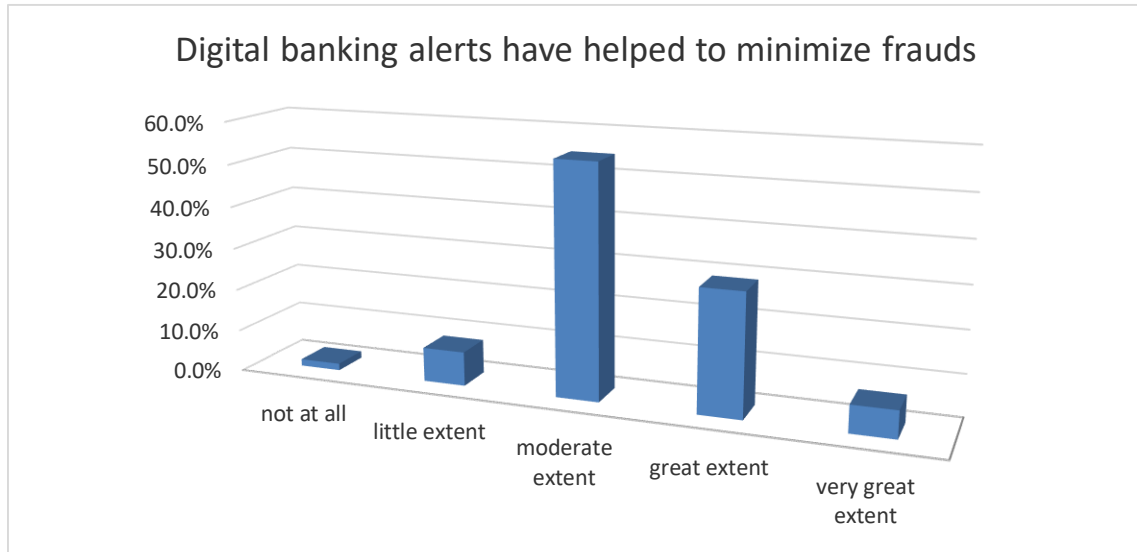


Figure 4.7: Digital banking technology alerts have helped to minimize cost

Source: Research data (2020)

According to the findings, 54.8% the respondents felt that the digital banking alerts helped to minimize frauds to a moderate extent, 29% the respondents felt that alerts helped to minimize frauds to a great extent, 8.1% the respondents felt that alerts helped to minimize frauds to a little great extent, 6.5% the respondents felt that the alerts helped to minimize frauds to a very great extent while 1.6% the respondents felt that the benefits did not alerts helped to minimize frauds.

The findings indicate that majority of the banks believed that digital banking technology helped them to reduce fraud levels to a moderate extent by sending alerts to customers whenever there are activities in their accounts.

4.3.4.2 Increase in income due to digital banking technology

Commercial banking offers various transactions services such as loans and general account enquiries from which they charge fees and or interest. The respondents were asked to indicate to what extent the banks income had increased due to digital banking services and the feedback was summarized in the figure 4.8 below.

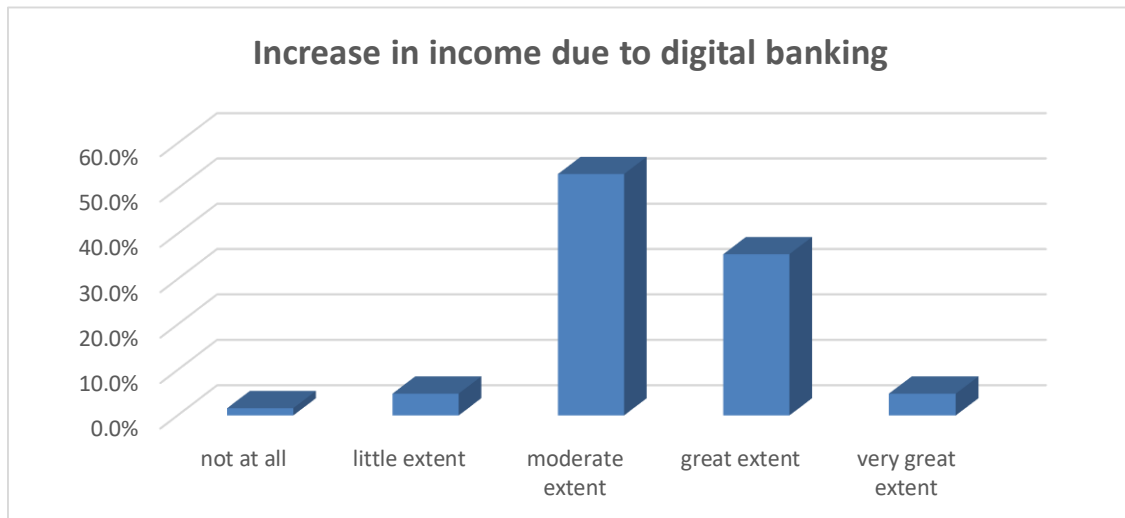


Figure 4.8: Increase in income due to digital banking technology

Source: Research data (2020)

Majority of the respondents felt that 53% felt that the banks income only increased at a moderate extent while 35% felt that the income increased to a great extent. 2% felt that income did not increase, while 5% felt that income increased to a great extent and a to a little extent.

4.3.4.3 Digital banking technology innovations helped the bank to record a good performance

The respondents were asked to indicate to what extent the digital banking technology helped to banks to record good performance the feedback was summarized in the figure 4.9 below;

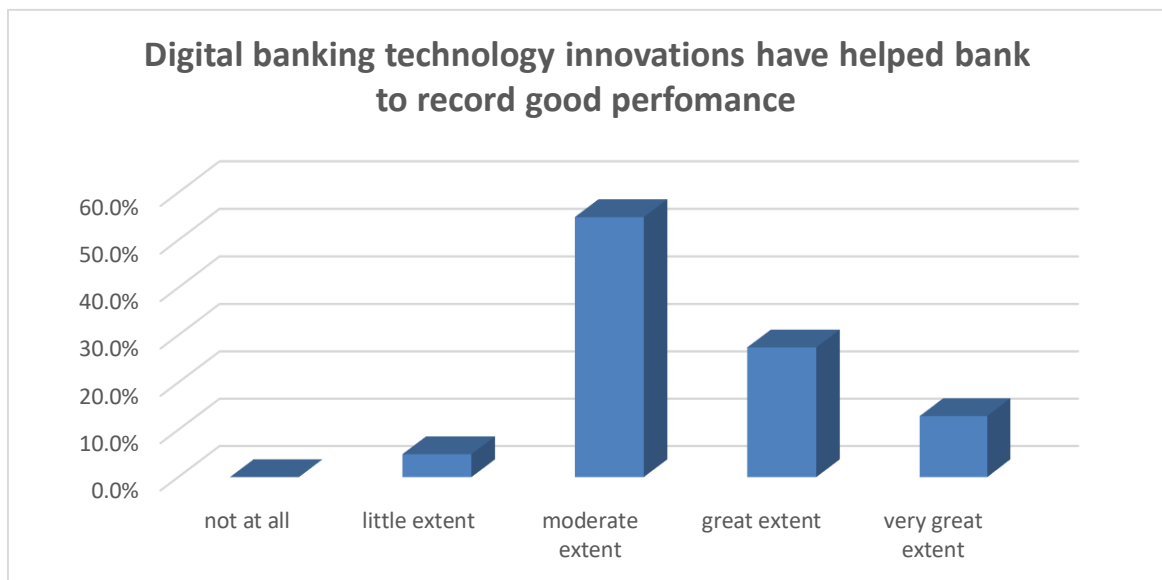


Figure 4.9: Digital banking technology and good performance

Source: Research data (2020)

From the findings, 54.8% the respondents felt that the digital banking digital banking technology innovations helped the bank to record good performance to a moderate extent, 27.4% the respondents felt that digital banking technology innovations helped to the bank to record good performance to a great extent, 12.4% the respondents felt that it helped the bank to record good performance to a very great extent, 4.8% the respondents felt that the

it helped the bank record good performance to a little extent while none of the respondents felt that digital banking technology helped that banks to record good performance.

4.3.4.4 Overall profit of the bank due to digital banking technology

The respondents were asked to indicate to what extent the banks overall profit had increased due to digital banking services and the feedback was summarized in the figure 4.10 below;

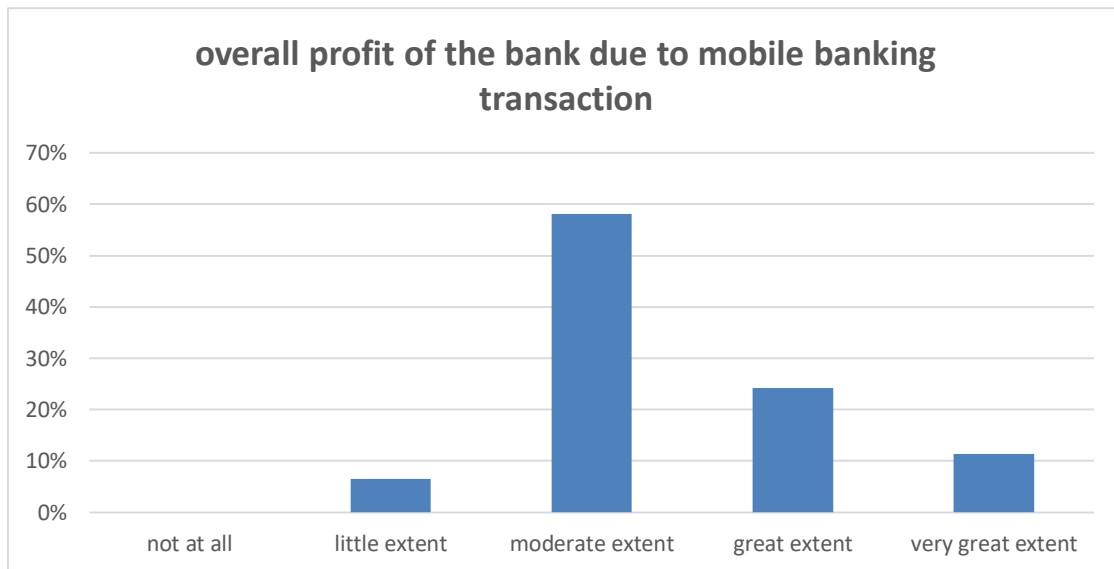


Figure 4.10: Overall profit of the bank due to digital banking technology

Source: Research data (2020)

In the figure 4.10 above, 58% of respondent felt that overall profit of the bank increased to moderate extent due to digital banking technology.24% felt that the profits increased to a great extent and 11% felt that it increased to a very great extent. 6% agreed that overall profit increased to a little extent while none of the respondent felt that profit did not increase.

The results indicate that general application of digital banking technology led to increase in a profits of the bank to a moderate extent. Banks are adopting use of digital technology such as internet and mobile banking to improve on their financial performance. The finding also agrees with those of Kathuo (2015) who noted in his study that banks had reported increased profits due to use of mobile banking technology.

4.3.4.5 Profit attributed to the bank due to digital banking technology innovation

The respondents were further asked to indicate the volume of profit they felt was attributable to digital banking services and the feedback was summarized in the figure 4.11 below;

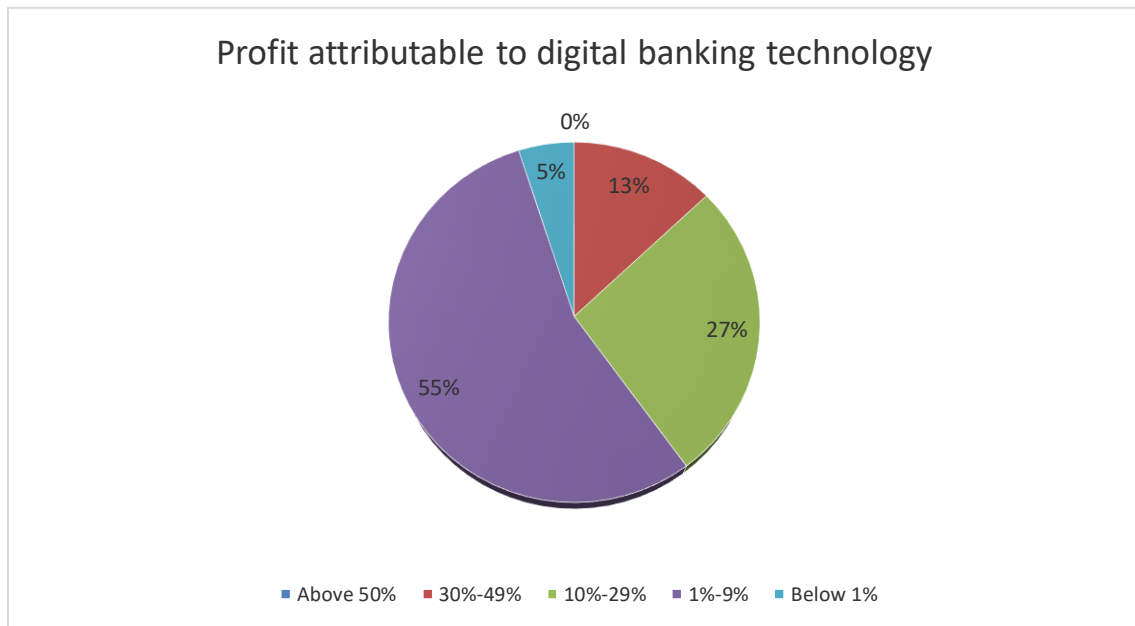


Figure 4.11: Overall profit attributed to digital banking technology innovations

Source: Research data (2020)

Figure shows that 5% of the respondents felt that profits contributed by digital banking technology is below 1% of the Banks profits while majority 55% felt that its between 1-10%,27% felt its between 10-30% and 13% felt its between 31-50%. None of the respondent felt it is above 50%.

These findings show that digital banking technology innovations had enhanced the profitability of the commercial banks to some extent however; main profits of the bank were not associated with digital banking technology innovations. According to CBK financial report (2017), The banking sector registered improved financial strength in 2017, with total net assets recording an increase of 8.3 percent from Ksh. 3,695.9 billion in December 2016 to Ksh. 4,002.7 billion in December 2017. The major contributors of the balance sheet were loans and advances, government securities and placements, which accounted for 50.3 percent, 24.9 percent and 4.2% respectively.

4.4 Regression analysis Results

To determine the relationship between access to digital banking technology, turnaround time when using digital banking technology and the cost of operating a digital banking to financial performance of the commercial banks, a linear regression was carried out using the following regression model:

$$Y = \alpha + \beta_1 AM + \beta_2 TAT + \beta_3 CM + \epsilon$$

The results presented in Table 4.14 present the fitness of model used of the regression model in explaining the study variables

Table 4.14: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.575 ^a	.330	.166	.71048

Source: Research data (2020)

R-Squared is a commonly used statistic to evaluate model fit. R-square is 1 minus the ratio of residual variability. The adjusted R-square, also called the coefficient of determinations, gives the percent of the variance in the dependent due to changes in the independent variables. From table 4.14 above, R squared of 33.0% on the financial performance of the commercial banks in Kenya could be attributed to the changes in access to digital banking technology innovations, turnaround time on digital technology innovations, and cost of adopting and maintenance of digital banking technology all combined at 95% confidence level. From the table there was a strong positive relationship between the dependent and independent variable at 0.71048.

Significance testing using the p-value indicates the level of relation of the independent variable to the dependent variable where if the significance number is less than the probability value (p) which is statistically set at 0.05, then the conclusion would be that the model is significant in explaining the relationship and if not, then the model would be regarded as non-significant In this regard, ANOVA was used to predict whether the overall

model could be used to significantly offer a good prediction of the outcome variable. Table 4.15 presents the results obtained from Analysis of Variance (ANOVA).

Table 4.15: Analysis of Variance

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	12.185	12	1.015	2.012	.043 ^b
Residual	24.734	49	.505		
Total	36.919	61			

Source: Research data (2020)

The F-ratio in the ANOVA table tests was assessed to show whether the overall regression model is a good fit for the data. ANOVA was used to predict whether the overall models could be used to significantly offer a good prediction of the outcome variable. From the test, the significant F value had a significance level of 0.043 which shows that the independent variables are statistically significant in predicting the dependent variable and that other variables not included in this model may have accounted for the remaining variance. The data is therefore ideal for making a conclusion that the independent variables are good predictors of financial performance of commercial banks as supported by a value of significance (p-value) which is less than 5% and f statistic of 2.012 (2.012, $p < 0.05$). It is evident that the regression model was a good fit for the data.

Regression of coefficients generated from analysis of the model were summarized in table 4.16 below.

Table 4.16: Regression Coefficients

		Coefficients				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.901	1.013		2.864	.006
	Access	.009	.141	.009	0.066	.046
	Turnaround time	.047	.145	.028	0.137	.024
	Cost	-.044	.151	-.050	-0.324	.045

Source: Research data (2020)

As per the SPSS generated table above, the established regression equation was

$$Y = 2.901 + 0.009 X_1 + 0.047 X_2 - 0.44 X_3 + \epsilon$$

Regression of coefficients results in Table 4.15 show access to digital banking and financial performance of commercial banks were positively and significantly related ($r= 0.009$, $p=0.046$). An increase in the unit change in access to digital banking (measured using volume of deposit, loans, and withdrawals) would lead to increase in financial performance by a factor of 0.009 units. These findings agree with the banking supervision report (CBK, 2017), which stated that customer deposits grew by 10.75% from 2,618.4 billion in December 2016 to ksh 2,900.0 billion in December 2017 due to mobilization of deposits through agency banking and mobile phone platforms. Increased use of digital platforms

such as mobile banking would therefore increase financial performance by improving liquidity of the banks.

The results also show that turnaround time and financial performance of commercial banks were positively and significantly related ($r=0.047$, $p=0.024$). This implies that a unit change in turnaround time (which was measured on how fast a customer completed a mobile transaction, system failures and efficiency). These results support the finding of Ritho and Jagongo (2015) in their study of mobile banking and financial performance where they found that mobile banking enhances performance of commercial banks due to increased efficiency, effectiveness and productivity.

The results further showed that cost of adopting and maintaining a digital banking technology and financial performance were negatively and significantly related ($r=-0.044$, $p=0.045$). A unit change in cost adoption and maintenance of digital banking technology innovations would lead to reduction in financial performance by a factor of 0.44 units. The findings were in line with that of Kingoo (2011) who indicated that cost of adopting IT in banking was significantly and negatively related to the bank's profitability and suggested that banks need to manage costs and risks associated with electronic banking while adopting technology to increase their profitability.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary, conclusion and recommendations of the main findings on the relationship between mobile banking and financial performance of commercial banks in Kenya.

5.2 Summary of the study

The study sought to determine the effect of digital banking technology innovation on financial performance of commercial banks in Kenya. A descriptive survey was employed to find out the effects of the adoption of the digital banking technology innovations on the financial performance of the commercial banks. The study adopted a census method where all the 42 commercial banks in Kenya were studied. The study made use of primary data collected from the respective banks respondent who mainly from finance and IT departments. The data collected was cleaned, coded and systematically organized in a manner that facilitates analysis using the Statistical for Social Sciences (SPSS) software. Quantitative analysis was analysed through descriptive statistics such as measure of central tendency that generated relevant percentages, frequency counts, means and standard deviation where possible.

Digital Banking technology provides a service to financial institutions in cooperation with mobile phone operators in enhancing their network. The technology allows customers with busy schedules to conveniently do their banking activities using their mobile phones or any other digital media anytime. Adoption of the technology improves the banks network by

getting banking services to the unbanked, those who do not have bank access or bank accounts or are living in remote areas.

Most of the respondents had an undergraduate education level and a work experience of over 4 years and hence they had the information needed to meet the objectives of the study. Additionally, most of the banks in this study were local (Kenyan) and all of them were offering mobile banking services.

5.2.1 Access to digital banking and financial performance

The study's first objective was to establish the influence of access to digital banking services on the financial performance of commercial Banks in Kenya. According to the findings, all the banks in this study had introduced digital banking services as a result of the financial technology innovations in the industry. The study found that access to digital banking services influenced the financial performance of commercial Banks in Kenya. Further, the study found that the introduction of digital banking technology in the banks improved their key deposits to a great extent) while withdrawals levels and value of loan also increased to a great extent. On the other hand, the study found that digital banking technology had improved banks liquidity position moderately.

The study assessed the effect of these aspects of access to financial services using digital technology innovations on financial performance of the banks and it found out that access to financial services through digital banking technology improved financial performance to a moderate extent. This was identified through the growth of customer deposits being supported by mobilization of deposits through agency banking and mobile phone platforms.

5.2.2 Turnaround time and financial performance

In the second objective, the study sought to establish how digital banking transaction speed and efficiency affected the financial performance of commercial banks in Kenya. This study established that most banks experienced system failures while providing the digital banking service. In addition, the study established that the system failures experienced by their banks affect the financial performance of their bank. The study also noted that it was faster to perform transactions through digital banking technology platform than through the banking halls. As a result, most banks introduced the digital banking technology platform because it proved to be an efficient way of tapping into the unbanked population. It was also noted that the system failures and downtime only contributed only to moderate extent to banks losses since most of the losses were recoverable.

5.2.3 Digital banking technology innovation Costs and financial performance

The last objective of the study was to ascertain the extent to which the costs of implementing and maintaining digital banking service influence the financial performance of commercial Banks in Kenya. This study established that the cost of implementing and maintaining the mobile banking service affects the financial performance of their bank. In addition, the study established that digital banking technology reduced operating cost to a great extent while staff cost, general administrative expense and user training cost reduced to moderate extent. According to Kigen (2010) in regards to a study he has done on the impact of mobile banking on transaction costs of microfinance institutions, he found out that in that period, mobile banking had significantly reduced transaction costs though it did not directly affect the banks because at that time there was a small mobile banking customer

base. This was different in that as at the time of this study, the mobile banking customer based had increased significantly.

5.3 Conclusion

Firstly, the study concluded that access to digital banking services influenced the financial performance of commercial Banks in Kenya. There was evidence that the introduction of digital banking technology in the banks improved their key deposits to a great extent while withdrawals levels and value of loan also increased to a great extent. Furthermore, the study found that digital banking technology had improved banks liquidity position and therefore considering these aspects, it can be hypothesized that there is a relationship between access to digital banking and financial performance of commercial banks in Kenya.

Secondly, the study concluded that digital banking technology cost affected the financial performance of commercial banks in Kenya moderately. It was noted that digital banking technology reduced operating cost to a great extent while staff cost, general administrative expense and user training cost reduced to moderate extent and at the same time banks income only increased at a moderate extent and as well as the overall profit of the bank as a result of use of digital banking technology.

Finally, the study concluded that turnaround time of the digital banking systems affected the financial performance. This study established that most banks experienced system failures while providing the digital banking service which lowered the speed of performing a transaction and in some cases resulted into losses which eventually if not recovered, affect the financial performance of the bank.

In overall, the study found out that digital banking technology had appositive impact on the profits of the bank to a little extent even though the overall profit of the bank may not reflect much from the digital banking technology services since the study established that this technology contributes below 10% to the overall profits. The study concludes that digital banking technology has contributed positively to the financial performance of commercial banks in Kenya. This could be attributed to the trends recorded in the variables where the access to digital platforms by users, reduction in operating cost and improvements in turnaround time had a positive and significant contribution on financial performance of commercial banks in Kenya. This contribution, however is not as much compared to the other traditional banking activities which do not rely on digital platforms.

5.4 Recommendations for policy contribution

From the above conclusion, the study recommends that policy makers consider financial digital technology innovations in their formulation of policies because of the technological developments and the expected switch from traditional brick and mortar system to technologically supported banking services. This is because the impact of such innovations on financial performance could be c higher if there is an increase in innovations. The banks have put in place measures to become more competitive by training its staff, investing in research and development of technology. In the long run, mobile banking is likely to have major impacts on the profitability of commercial banks as it smoothens business operations.

5.5 Recommendations for the banking industry practice

The study recommends that the financial institutions should offer low transaction rates within their digital networks and ensure deposits of the various customers are protected at all times. This will lure customers to adopt this as a culture thus ensuring the future sustainability of using the digital platforms for banking services. Furthermore, if the its cheaper than the number of people in the remote areas who are unbanked may find it easier to use the banking services. The study recommends that banking institutions should consider coming up with lock in strategies for the already captured market. This will award more power to the bank in controlling the prices and services it offers to its customers.

The study recommends that the banking institutions should considered intensifying the M-Banking network which will ensure services accessibility by customers and thus improving financial performance. Finally, the study recommends that commercial banks in Kenya should ensure that systems failures are kept at minimal so as to reduce its influence on the financial performance of commercial banks in Kenya.

5.6 Recommendation for Further Research

This study sought to determine the effects of digital banking technology innovations on the financial performance of banking institutions in Kenya. The study suggests that further research be conducted on the effects of technology innovations on the financial performance of commercial and micro finance banks in Kenya.

The study recommends a detailed study around the challenges faced by commercial banks in adopting digital banking technology due to macroeconomic factors such, interest rates, legal frameworks, societal and cultural issues. The study found out that digital banking has

increased immensely of several years and therefore recommends that a study be done on the impact of digital banking on the overall economy.

5.7 Limitations of the study

The main limitations of this study are that part of data used is secondary data generated for other purposes hence may not accurately predict the relationship among the variables and also the measures used may keep on varying from one year to another subject to the prevailing condition.

For example, the financial performance of commercial banks is subject to the total assets owned by commercial banks. In addition, time and resources are also inadequate for the researcher to perform this kind of research. This is because the researcher needed to cover a wider geographical scope to get a representative sample yet there is limited time and resources in terms of money.

Further, the study recommends a study on impact of mobile banking services on financial performance of telecommunication companies to find out if it would lead to similar results.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

This questionnaire is intended to evaluate the effects of digital banking on the performance of banks in Kenya. The information provided is for academic purposes only. Please answer all questions honestly according to the given instructions

SECTION A-ORGANIZATION AND PERSON PROFILE

Background information please use a tick in the space provided

1. Age Bracket (in years)

18-30

31-50

51-60

Above 60

2. Level of education you have attained

Master's

Degree

Diploma

Certificate

3. For how long have you been with the bank?

Less than 1 year

1-2 years

3-4 years

More than 4 years

4. Position held (department).....

5. Indicate the ownership composition of your bank from the below?

Local (Kenyan)

Foreign

Other

Please specify

Local (Kenyan)

Foreign

Other

Please specify

SECTION B- DURATION OF E-BANKING SERVICE

6. Does your organization offer digital banking technology services?

Yes No

7. If yes, please indicate the year the services were introduced.....

1-5 years 5-10years Above 10years

8. One needs to register with the bank to access these services?

Yes No

9. Should a digital-banking customer be an account holder with your bank?

Yes No

SECTION C- ACCESS TO DIGITAL BANKING SERVICE

To what extent do you agree that the following affect the performance of your bank as a result of introduction of digital banking platform? Tick the option that best explains your view.

(1= Not at all, 2= little extent, 3=Moderate extent, 4=Great extent, 5=Very great extent)

	Access to digital banking services	1	2	3	4	5
10	Due to digital banking technology, the volume of deposits in my bank has increased					

11	Due to digital banking technology, the volume of withdrawals in my bank has increased					
12	There is increased liquidity position in my due to digital banking services					
13	The value of loans and advances in my bank has increased due to mobile banking					

SECTION D- TURNAROUND TIME OF DIGITAL BANKING TRANSACTIONS

To what extent do you agree that the following affect the performance of your bank as a result of digital banking products/services? Tick the option that best explains your view.

(1= not at all, 2= little extent, 3=moderate extent, 4=great extent, 5=very great extent)

	Turnaround time	1	2	3	4	5
14	One can access digital banking services anytime 24 hrs.					

15	It takes shorter period to perform a transaction through digital banking platform compared to banking hall.					
16	Digital banking system failure will result into a loss to the bank					
17	Digital banking has increased Efficiency in service delivery					

SECTION E- OPERATION COSTS

To what extent do you agree that the following affect the performance of your bank as a result of introduction of digital mobile banking product/services? Tick the option that best explains your view.

(1= not at all, 2= little extent, 3=moderate extent, 4=great extent, 5=very great extent)

	Operation cost	1	2	3	4	5
18	Digital banking has reduced operating and maintenance costs for the bank					
19	Digital banking through the use of mobile phones have helped reduce staff cost					

20	Digital banking use has led to reduction in banks general administrative expenses.					
21	It is expensive to on board digital banking technology due to higher user training costs.					

SECTION F- PERFORMANCE OF COMMERCIAL BANKS

Indicate by a tick (☐) the extent to which you agree with the following statements concerning the performance of your bank as a result of its digital banking services and product.

(1= Not at all, 2= little extent, 3=Moderate extent, 4=Great extent, 5=Very great extent)

	Performance of banks	1	2	3	4	5
22	The number of registered users is growing at a rate higher than rate at which costs are rising					
23	Digital banking alerts have helped to minimize frauds					
24	The banks income has increased due to mobile banking loans					

25	The benefits of digital mobile banking in my bank far outweigh the costs					
26	Overall Profit of the bank has increased due to digital banking transactions					
27	Digital banking service helped the bank to record a good performance					

	Performance of banks	Below 1%	1-10%	11-30%	31-50%	Above 50%
28	What is the volume of profits attributed to digital banking technology					

28. Comment on the effect Digital banking on the financial performance of your Bank

.....

.....

APPENDIX II: INTRODUCTION LETTER

Kenyatta University
School of Business
NAIROBI
May, 2018.
Dear Respondent,

RE: COLLECTION OF SURVEY DATA

I am a student at Kenyatta University pursuing a Masters of Business Administration program.

Pursuant to the pre-requisite course work, I would like to conduct a research project to assess the **EFFECT OF DIGITAL BANKING ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA.**

Kindly therefore, complete the attached questionnaire with accurate information that -was used entirely for this research while observing utmost confidentiality.

Your assistance is highly valued. Thank you in advance. The information you provide was used exclusively for academic purposes. I assure you that the information you give was treated with strict confidence. At no time will you or your organization's name appear in my report.

Your cooperation was highly appreciated.

Yours Faithfully,

Ouma Stephen Otieno

APPENDIX III: LIST OF COMMERCIAL BANKS IN KENYA

Table 3.1: categories of banks

Tier 1 (Assets over 5 billion shillings)	TIER (Assets of 6 – 4.9 billion)	TIER 3(below 6 billion shillings)
KCB	Prime	Giro
Barclays	Housing Finance	Guardian
Standard Chartered	Bank of Africa	Southern Credit
Cooperative	Bank of India	Gulf African
CFC Stanbic	Ecobank	Consolidated
Equity	Family Bank	Habib Bank
Commercial Bank of Africa	Baroda	Victoria
Citibank Kenya	Chase	Equatorial
NIC	Fina	Fidelity
National Bank of Kenya	K-Rep	Credit
Diamond Trust	ABC	Transnational
Investment & Mortgages	Habib AG Zurich	Middle East
	Development Bank of Kenya	First Community
		Paramount Universal
		Oriental
		City Finance

Source (Researcher 2020)

APPENDIX IV: RESEARCH AUTHORIZATION LETTERS



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 4150

Internal Memo

FROM: Dean, Graduate School

DATE: 18th January, 2019

TO: **Ouma Stephen Otieno**
C/o Accounting and Finance Dept.

REF: D53/OL/23205/2013

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL

This is to inform you that Graduate School Board at its meeting of 9th January, 2019 approved your Research Project Proposal for the M.B.A Degree Entitled, "**Digital Banking Technology Innovation and Financial Performance of Commercial Banks in Kenya**".

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

Thank you.

ELIJAH MUTUA
FOR: DEAN, GRADUATE SCHOOL

c.c. Chairman, Accounting and Finance.

Supervisors:

1. Dr. Fredrick W.S. Ndede
C/o Department of Accounting and Finance
Kenyatta University

EM/Inn



**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

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NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/36021/28307**

Date: **22nd February, 2019**

Stephen Otieno Ouma
Kenyatta University
43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***“Digital Banking Technology Innovations and Financial performance of Commercial Banks in Kenya”*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **21st February, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.


**BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.



REPUBLIC OF KENYA

CONDITIONS

- 1. The License is valid for the proposed research, location and specified period.**
- 2. The License and any rights thereunder are non-transferable.**
- 3. The Licensee shall inform the County Governor before commencement of the research.**
- 4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.**
- 5. The License does not give authority to transfer research materials.**
- 6. NACOSTI may monitor and evaluate the licensed research project.**
- 7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.**
- 8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.**



National Commission for Science, Technology and Innovation

RESEARCH LICENSE

National Commission for Science, Technology and Innovation

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CONDITIONS: see back page

