EFFECT OF ALTERNATIVE BANKING CHANNELS ON OPERATIONAL EFFICIENCY OF COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

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

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

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DEDICATION

I dedicate this work to my parents David Chirah and ZipporahChirah. I thank you very much for the love, patience and sacrifices that you have made for me. You have supported me throughout my academic journey financially and also emotionally. My husband Michael Ngari and my son MelickNgari, you have made me want to reach my goals now more than ever.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ATM   Automated Teller Machine

CBK   Central Bank of Kenya

CBS   Core Banking Solution

CRM   Customer Relationship Management

ICT   Information, Communication & Technology

IVR   Interactive Voice Response

NSE   Nairobi Securities Exchange

POS   Point of Sale

RBV   Resource Based View

ROA   Return on Assets

SMS   Short Message Service

TAM   Technology Acceptance Model

VSAT   Very Small Aperture Technology

ABSTRACT

There is a revolution in the banking sector worldwide; this has seen the banks embrace new technology as well as review of the governing regulations. Other banks are changing and embracing relationship management and marketing via technologies for instance phones, emails and even social media with the general consensus that this enhances the value of the firm and its clients. The advancement in technology has made some tasks cheaper and efficient but it also has its fair share of challenges. This has seen firms in the banking sector use technology to develop alternative banking channels to reduce costs and enhance efficiency and convenience but still fail. This study sought to determine the effect of alternative banking channels on operational efficiency of commercial banks in Kenya. The study's population was all the 42 commercial banks operating in Kenya. Data was obtained from 41 out of the 42 banks giving a response rate of 97.62%. The independent variable for the study wasalternative banking channels as measured by value of transactions carried out through mobile banking, internet banking, agency banking and ATMs. The control variables were liquidity as measured by the current ratio, firm size as measured by natural logarithm of total assets and capital structure as measured by debt ratio. Operational efficiency was the dependent variable which the study sought to explain and it was measured by the ratio of operating expenses to total revenue. Secondary data was collected for a period of 5 years (January 2013 to December 2017) on an annual basis. The study employed a descriptive cross-sectional research design and a multiple linear regression model was used to analyze the association between the variables. Data analysis was undertaken using the Statistical package for social sciences version 21. The results of the study produced R-square value of 0.177 which means that about 17.7 percent of the variation in the Kenyan commercial banks' operational efficiencycan be explained by the seven selected independent variables while 82.3 percent in the variation of operational efficiency of commercial banks was associated with other factors not covered in this research. The study also found that the independent variables had a weak correlation with operational efficiency (R=0.421). ANOVA results show that the F statistic was significant at 5% level with a p=0.000. Therefore the model was fit to explain the relationship between the selected variables. The results further revealed that liquidity produced positive and statistically significant values for this study. The study found that mobile banking, agency banking, ATMs, internet banking, firm size and capital structure are statistically insignificant determinants of operational efficiency of commercial banks. This study recommends that measures should be put in place to enhance liquidity as this will improve operational efficiency of commercial banks in Kenya.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Over the years technology has had a significant impact on how banks operate and formed bedrock upon which banks individuate their products from competitors. The products are provided through electronic intermediaries such as automated teller machines, cellular devices and the internet. Banks regularly depend on modern technology for customer service to satisfy their banking needs (Kolodinsky, Hogarth &Hilgert, 2004).From a glance, it is clear that majority of banks have tried to apply alternative banking channelsto improve operational efficiency (Ren& Stevens, 2011).According to Nofie (2011), innovation in the financial sector pertains to new, better processes lowering cost of producing existing financial services. According to Agboola (2006), alternative banking channels are key components to banking development in financial emergency.

This study was informed by three theories. These are the financial intermediation theory, diffusion of innovation theory and technology acceptance model. Financial intermediation theory was developed by Mises (1912) who suggests that financial institutions play a critical where they gather deposits and lend them out to get interest thus for them to boost their performance, they have to enhance customer deposits through developing channels that would enable the customers to transact easily and conveniently. Diffusion of innovation refers to the communication of an idea which is considered to be novel to the members of a social system through certain preferred channels. Innovations have to gain acceptability in a wide area in order to be sustainable. This theory has guided the study of the adoption of various technological innovations in businesses. In this exploration, technology acceptance model will be

utilized to discover how the utilization of technology enhances operational efficiency of commercial banks in Kenya and how the accessibility of technology impacts the utilization of technological innovations in among commercial banks in Kenya

Since the collapse of many banks in 1990s, many challenges have been experienced in Kenya's banking sector. Many internet banking services such as ATMs, internet banking and mobile banking have been adopted by commercial banks so as to reduce their operational costs. The Central Bank of Kenya deepened the scope of commercial banks in 2010 through allowing them to operate through licensed third party agents who could operate on their behalf. Regulated deposit taking microfinance institutions were further allowed in May 2012 by the central bank to operate agencies. Financial institutions and mobile network operators have rapidly adopted the use of agency banking and mobile banking. Safaricom introduced more than forty thousand mobile payment agents across the country in between 2007 and 2012. Approximately 10600 agents have been established by the ten prominent banks across the country with the Kenya Commercial Bank and Equity bank introducing more agency networks across the country than any other. All these models seek to reduce commercial banks' operating costs (Waithanji, 2016).

1.1.1 Alternative Banking Channels

Alternative banking channels are methods or ways of providing the banks services to the customer(Howcroft, 1993). These methods are sometimes referred to as branchless banking, which implies that they are used by banks as distributional channels for delivering financial services to the customers without physically visiting the bank branches. Other literature also use terms such as e-banking, online banking, electronic banking, direct banking, virtual banking and high tech-banking to mean

alternative banking channels(Kimball &Gregor, 1995). Advancement in ICT has made it possible that bank account holders can transact from any location without physically walking into the financial structure through alternative banking channels. This has been developed in an effort to reach the unbanked population that has no time to make queues in banks to transact(Kumbhar, 2011).

Banking channels can be categorized into direct and indirect. Direct channels refer to those that are owned by the bank thus it has control over them while indirect channels refer to the channels that the bank does not wholly control. The two types of direct channels are location-based direct channels (those that occupy a physical space such as branches, roaming vans, kiosks and business units) and remotely-based channels (those that don't occupy physical space such as internet, Interactive Voice Response (IVR) and call centers (Saxena, 2009). Indirect channels include; using a mobile phone to transact, issuing a MasterCard prepaid card, joining a national switch and deploying ATMs, or using banking agent(Kimball &Gregor, 1995).

According to Christopher, Mike, Visit and Amy (2005), alternative banking channels that are commonly used by banks are internet banking, ATMs, bank automation, mobile banking, core banking, credit cards and debit cards. Chebii (2013) on the other hand list agent banking, mobile banking and internet banking as the most commonly used alternative banking channels. Kumbhar (2011)asserts that in India, there are various alternative banking channels such as; ATM, Core Banking Solution (CBS),POS Terminals, Credit Cards, Internet Banking, Debit Cards, Mobile Banking among others. Kohali and Sheleg (2011) recognize the use of telebanking, ATMs, online banking, mobile banking and social media banking by banks worldwide.

1.1.2 Operational Efficiency

This is the firm's ability to minimize waste and maximize resource capabilities so as to deliver quality products and services to the clients (Kalluru&Bhat, 2009). It involves the identification of wasteful resources and processes that affects productivity and growth of organizations profits. The main concern of operational efficiency is redesigning new work processes that improve productivity and quality (Darrab& Khan, 2010). Charnes, Rhodes and Coopers (1978) defines operational efficiency as the ratio of weighted outputs to the weighted inputs.

The real measurement of operations efficiency is ratio of the actual productivity to the maximum productivity that can be attained. The highest possible attainable productivity is described as the desired productivity. According to Hackman (2008), the process of analyzing productivity and efficiency is linked with economies of production which answers basic question such as what is the firm's efficiency in the utilization resources during the production process and its efficiency during scaling operations.

There are several ratios of measuring operational efficiency. To begin with, we can use the total asset turnover ratio which measures the ability of the company to produce sales considering its investment in total assets. The formula for the ratio is dividing net sales by average total assets. Secondly we can use the fixed-asset turnover ratio which is analogous to total asset turnover ratio except that the only factor taken into account is the fixed assets turnover. Fixed-asset turnover is derived by dividing net sales by average net fixed assets. Another ratio for measuring operational efficiency is operating ratio which shows the efficiency of a company's management by comparing operating expense to net sales. The smaller the ratio, the

greater the organization's ability to generate profits(Rao&Lakew, 2012). The current study will use the ratio of operating costs to total revenue as a measure of operational efficiency.

1.1.3Alternative Banking Channelsand Operational Efficiency

Financial Innovation–performance relationship is context dependent. Certain financial improvements mainly focus on enhancing the current products, processes and business models in an existing market while other financial developments disrupt the present markets as a consequence of introducing new products, processes and business models to a target on the new market. Factors such as the age of the firm, the sort of innovation and the cultural context affect the effect of innovation on firm performance to a substantial degree (Tidd, 2001).

With reference to Harker and Zenios (2000), it's stated that technological advancement encourages more competitive force. Primarily, it opens up new conveyance channels, keeping in mind that those are not more cost effective for the organization; hence customers get the chance to rely on upon them and demand access. Nevertheless, before the bank branch was the main channel for the dispersion of financial services, we see today an assortment of channels eroding the branch's dominance. The economies of scale that lead to more incorporated automation cause more economies of scope effects. As financial establishments – in concurrence with all other retail services – understand that consumer satisfaction and loyalty lead to a fixed progression, they go for increasing the share of customers' wallets that they are servicing. With stage automation, a representative can get a single view of the whole customer relationship; economies of scope can be made when a firm offers appropriate product mix to support its customer base.

Gale and Allan (1994) opposed advancement to remain noticed by means of: presentation of original economic devices and/or services and/or repetition, launching of original fund expenditures, discovering new wellsprings of funds, launching of original developments and/or methods towards handling everyday processes, and/or setting up an innovative organization; with every one of respective modifications to be a piece of present economic organizations, rise of remarkable development of innovative economic organizations and marketplaces. Financial advancement refers to making before promoting innovative economic devices, also inclusive of first-hand economic know-hows, organizations and marketplaces (Lerner &Tufano, 2011). The advancements are in some cases separated into products and/or procedure variations, through merchandise advancements demonstrated through innovative unoriginal agreements, innovative commercialsecurities, or first-hand types of joint speculation goods, plus processes enhancements characterized via first-hand ways for disseminating securities, handling dealings, and/or valuing trades.

1.1.4Commercial Banksin Kenya

Currently, in Kenya the licensed commercial banks number is 42 and there is one mortgage finance company. Private investors own 39 commercial banks and the mortgage finance institution whereas the remaining 3 commercial banks are the only banks which Kenya Government holds a controlling ownership. Out of the 39 banks which are owned by private investors and 1 mortgage finance, 25 are locally owned (i.e. Kenyan citizens are their major shareholders) while 14 have alien ownership. The rest of the local commercial banks are largely family owned (CBK, 2016).

Many changes have been made in the banking sector to improve their way of operation and work on efficiency. These events include an increase in competition for

financial services, banking consolidation and technological innovation. The banks therefore are forced to focus more attention on areas enhancing efficiency such as providing services and products more efficiently and controlling costs in banking. The urge to reduce both administrative, operational costs and competition has led to the adoption of alternative banking channels (Mutua, 2010). Ngaruiya (2014) states that adoption of mobile money transfers was perceived as tool which improves the manner in which financial transactions are undertaken. This implies that the rapid adoption of mobile phones uplifted this sector's financial functionality.

Operational efficiency in the sector will ensure commercial bank's the shareholders get a return to their investment which triggers more investment thus increased economic growth. Poor performance on the other hand by banks will lead to failure of financial market which may cause a financial crisis that hinders economic growth. Although there is a general register of good performance among commercial banks in Kenya, several are not doing well financially (Oloo, 2011).The industry's reforms such as agency banking, operationalization of credit reference bureaus, implementation of e-commerce in the payment systems, implementation of the Microfinance Act and the activation of horizontal repos will enhance the sectors growth and development (Adembesa, 2014).

1.2 Research Problem

There is a revolution in the banking sector worldwide; this has seen the banks embrace new technology as well as review of the governing regulations. This has led to banks adopting technology in their operations. Other banks are changing and embracing relationship management and marketing via technologies for instance phones, emails and even social media with the general consensus that this enhances

7

the value of the firm and its clients (Kohali&Sheleg, 2011). The advancement in technology has made some tasks more cheaper and efficient but it also has its fair share of challenges (Aladwani, 2001). This has seen firms in the banking sector use technology to develop alternative banking channels to reduce costs and enhance efficiency and convenience but still fail (Kombe&Wafula, 2015). This entails a review of the impact alternative banking channels have on operational efficiency of banks.

Kenyan banks have embraced ATMs, POS, mobile banking, internet banking, agency banking and card business. Alternative banking channels are being used as a tool to cut cost, increase efficiency, deliver product varieties, and increase flexibility or for the mere purpose of being perceived as technology leader (Pyun, Scruggs & Nam, 2002). Ogare (2001) observes that alternative banking channels affects performance of commercial banks. However, a company may be efficient but not profitable or profitable but not efficient. More banks are embracing alternative banking as a competitive strategy to increase performance but with little attention on indirect impact such as operational efficiency.

Internationally, Kumbhar (2011)evaluated alternative banking channels and customers satisfaction among private and government owned banks in India and found that there is a significant relationship between alternative banking as shown by quality of the service, how people perceive the brand and value that customers perceive to get and satisfaction derived by the customers.Venansius (2014) researched on utilization of technology to improve on service. He reasons that innovation is an instrument that ought to be abused to upgrade service conveyance in institutions that provide access to monetary services. It makes an upper hand as well as improves business

development and steadiness. Stoica, Mehdian andSargu (2015) did a research on how internet banking impacts on the performance of Romanian banks and concluded that e-banking provides efficient and lower cost services which increase banks' performance.

Locally, Njogu (2014) studied the effect of electronic banking on profitability of Kenyan Commercial Banks and found out that there exists a strong positive relationship. Kombe andWafula (2015) sought to establish whether e-banking has an effect on financial performance of commercial banks in Kenya and concluded that e-banking enables cheaper services with round the clock accessibility.Kimani (2015) did a study on effects of adoption of mobile banking on commercial banks operational efficiency. It was established that a correlation exists between growth in mobile banking and growth in banking efficiency. Okiro and Ndungu (2013) examined the impact of mobile and Internet banking on performance of Kenyan financial institutions. The study found out that the cash withdrawals was the most common used mobile banking services that affected the performance of commercial banks.Although the studies conducted before in Kenya have studied the effect of dividend payout on value of firms, none has focused on insurance companies. The current study intended to fill this research gap by answering the research question; what is the effect of dividend payout ratio on value of insurance companies listed at the NSE?

1.3 Objective of the Study

The objective of this study was todeterminethe effect of alternative banking channelson operational efficiency of commercial banks in Kenya.

1.4 Value of the Study

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

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

To the government and other policy makers, the inference drawn from this study is useful in regard to assisting in guiding and formulating policies and guidelines that would help commercial banks and other banks in the sector adopt alternative banking channels that would enhance their efficiency which in turn will contribute to the sector performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

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

2.2 Theoretical Framework

This presents review of the relevant theories that explains the relationship between alternative banking channels and operational efficiency. The theoretical reviews covered are technology acceptance model, financial intermediation theory and diffusion of innovation theory.

2.2.1 Technology Acceptance Model

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

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

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

2.2.2 Financial Intermediation Theory

This theory was developed by Mises (1912). This theory suggests that financial institutions more so banks play the role of a financial intermediary. Their role is to mobilize deposits from customers who have excess money and lend them out to the deficit spending units in order to get interest. This relationship puts banks in a situation where they take money from customers who have short term maturity and lend it out to customers on long term basis and this enables them to create liquidity (Dewatripont, Rochet, &Tirole, 2010). According to Mises (1912), the banks activity as negotiators of credit is characterized by borrowing money from lenders in order to lend it.

The role of banks is thus that of financial intermediation or that of creating credit and money. If banks play the role of financial intermediary they would not create money and if they stop, then they would be able to assume the role of money creation (Mises,

1912).The Financial Intermediation Theory is criticized by Allen and Santomero (2001) on the basis that the theory views risk management as only of recent concern to the financial sector and putting central the concept of participation costs. This view is relevant to this research through its concept where banks can determine their performance through enhancing customer deposits by developing channels that would enable the customers to easily and conveniently transact with the bank.

2.2.3 Diffusion of Innovation Theory

According to Mahajan and Peterson (1985), an innovation is any idea, practice or object that is that is introduced into a social system for the first time whereas diffusion of innovation is the process through which the innovation is conveyed through specific channels over a period of time within a social system. In this context, diffusion of innovation theory seeks to describe the manner in which new inventions such as mobile banking and internet are adopted and used within a social system (Clarke 1995).

According to Sevcik (2004), the innovation adoption process is not instant but takes time. He further argues that diffusion of innovation is influenced by resistance to change since it slows down the innovation adoption process. Innovation adoption process is influenced by five major attributes namely relative advantage, compatibility, complexity, observability and triability (Rogers 1995). Rogers argues that the level of new innovations adoption depends on the manner in which new organization perceives its relative advantage, triability, compatibility, complexity and observability. If a Kenyan organization observes the benefits of alternative banking channels, then these innovations will be adopted when other prerequisite tools are

available. Innovation adoption is faster in organizations with information technology departments and internet access as opposed to those without.

2.3 Determinants of Operational Efficiency

The operational efficiency of firms can be influenced by elements either external or internal to the firms that define the level of output. The internal factors are different for each firm and determine its efficiency. These factors result from managerial decisions together with the board. The internal factors include innovations, capital structure, firm size, liquidity, management efficiency, capital, market power among others. External factors are not within the control of management. They are factors that the firm does not have control over them but rather they need to develop strategies to deal with them (Athanasoglou, Brissimis, & Delis, 2005).

2.3.1 Alternative Banking Channels

A number of banking channels have been adopted by banks in pursuit of improved operational efficiency. This study discusses the following alternative banking channels; mobile banking, internet banking, agency banking and ATMs.

2.3.1.1 Mobile Banking

This involves provision of banking services through the use of mobile devices. These services may include transacting with the account or on the stock market or accessing account holders information such as account balances. Porteous (2006) asserts that the institutions that offers mobile banking services allow their customers access their account balance, order cheque book, do funds transfer, receive credit and debits alerts, receive minimum balance alerts, do bill payments from their phones and check information such as interest rates and exchange rates.

14

Porteus (2006) suggested that mobile banking is the next big scheme that is emerging so fast in the global banking and financial service sectors. This is attributed to the fact that mobile banking reduces overall operational cost, taps in a larger customer base as well as reduce operational cost. This high rate of demand is being fueled by the increasing adoption of mobile phones and the increased demand for convenience by account holders. A study by Mburu (2013) found that mobile banking offers many benefits to customers as well as the banks. To clients it increases convenience and saves time. To the banks they benefit from the low cost of delivering their services to the customers and eliminating location barriers to customer's access to the banks.

2.3.1.2 Internet Banking

Internet banking is all about enabling the account holders to access and transact using their bank accounts via the banks website (Essinger, 1999). It involves use of telecommunication devices and networks to provide a wide range of products and services to customers as well as reach out to potential customers. Munyoki (2013) suggested that internet banking is mostly used to attract and retain customers. Internet banking is also used in tapping into new market as well as improving service quality. This internet banking platform is likely to have a significant effect on the banks performance.

Internet banking has increasingly attracted attention from bankers, financial services sector participants, regulators and policy makers and law makers. This is attributed to the benefits it is assumed to bring about for instance reduction of costs, increase bank revenue and make banking flexible for customers. While some are even interested in internet banking for policy issues. Despite all the attention, there still exists scarce literature concerning internet banking which has left bankers and policy makers using

circumstantial evidence and speculations when handling matters concerning internet banking (Karen *et al,* 2010). Banking with the use of internet cuts the bank's costs, reduce staffing levels, increase commission income and make banking more convenient for customers which may in turn contribute to the bank's profitability. The internet banking service offers customers total control and flexibility as compared to other banking services (Essinger, 1999).

2.3.1.3 Agency Banking

Agency banking involves a partnership by the banks with shops, pharmacies, construction material stores and other non-bank retail outlets to provide banks financial services (Kumar, 2006). According to Mwangi (2011), these agents are selected based on various aspects such as the network connectivity they have, specific service they will provide, their ability to carry out anti money laundering procedures, particular business strategy and financial projections of the business. The bank's use of retail agents may be more convenient and efficient than letting account holders and potential holders to physically walk to a bank branch thus enhancing financial inclusion (market access) (Lyman, Ivatury&Staschen, 2006). This will widen the banks market which may result to increased profits.

2.3.1.4 Automated Teller Machine

ATMs also known as automated banking machines (ABMs) are computerized telecommunications devices that provide the banks account holders with access to withdrawal and deposit services without the need for human intervention. This is the oldest of the alternative banking channels mostly in developed countries. Due to this, the ATMs enjoy the highest level of acceptance among bank account holders (Hans

&Kamath, 2013). With the use of an ATM card, the customers can access their bank accounts and information and also do transactions. This allows the customers the flexibility and convenience since it does not involve the account holder visiting the bank.

ATMs replace labor intensive transaction systems that were paper-based (Ogbujiet al., 2012). In Kenya, this channel was also one of the earliest and widely adopted (Nyangosiet al., 2009), although with time, it's usage is being surpassed by mobile banking (CBK, 2008). This attributed to the high number of people who now have access to mobile phones whose network is available even in remote area as compared to ATM machines.

2.3.2 Capital Structure

According to the international prudential regulation, capital ratio is a vital tool for determining capital adequacy and should examine the firms' safety and soundness. The reduction of costs by highly capitalized firms significantly reduces their funding costs, which significantly influences their efficiency. Alternatively, highly capitalized firms do not utilize external funds which improvetheir efficiency. Furthermore, if we factor in the conventional risk return hypothesis, firms with lower capital ratios will have higher efficiency compared to better-capitalized firms. Bourke (1989) report a positive and significant association between capital structure and efficiency.

Usage of debt comes with some agency costs like the existence of constraints put by the firm providing debt on how an organization is to run its affairs (Lee, 2009). This may bring about inflexibility in undertaking some projects even if they promise greater return on equity (Amato &Burson, 2007). This may negatively affect the overall performance of the organization which will in turn affect its efficiency.

17

2.3.3 Liquidity

Liquidity is defined as the degree in which an entity is able to honor debt obligations falling due in the next twelve months through cash or cash equivalents for example assets that are short term can be quickly converted into cash. Liquidity results from the managers' ability to fulfill their commitments that fall due to creditors without having to liquidate financial assets (Adam & Buckle, 2003).

According to Liargovas and Skandalis (2008), liquid assets can be used by firms for purposes of financing their activities and investments in instances where the external finance is not forthcoming. Firms with higher liquidity are able to deal with unexpected or unforeseen contingencies as well as cope with its obligations that fall. Almajali et al., (2012) noted that firm's liquidity may have high impact on efficiency of firms; therefore firms should aim at increasing their current assets while decreasing their current liabilities as per his recommendation. However, Jovanovic (1982) noted that an abundance of liquidity may at times result to more harm.

2.3.4 Management Efficiency

Management efficiency is a key internal factor that qualitatively measures and determines the operational efficiency of a firm. The ability of the management to efficiently utilize the resources of the firm, their ability to maximize funding and their ability to efficiently allocate those funds are some of the ways of assessing the management efficiency (Kusa&Ongore, 2013).

Management efficiency is a qualitative measure and determinant of operational efficiency and it can be assessed by looking at the quality of the staff, the effectives and efficiency of the internal controls, the discipline within the organization and the effectiveness of the management systems (Athanasoglou, Sophocles&Matthaois,

2009). The quality of the management has an influence on the level of operating expenses which affects the bottom line of a firm hence management efficiency significantly affects the operational efficiency of firms (Kusa&Ongore, 2013).

2.3.5 Firm Size

The most fundamental question underlying firm policy is at what size is firm efficiency maximized. The expansion of the size of the firm increases its efficiency up to a certain level where any further increase becomes harmful since bureaucratic and other managerial issues and challenges set in. Hence the relationship between size and efficiency is nonlinear in nature. We utilize the logarithm of the assets of the firm(logarithm) and their square so as to curb this likely non-linear association (Yuqi, 2007).

Burca and Batrinca (2014) asserts that the relationship existing between size and financial performance is positive in the sense that more resources are available in larger firms, better risk diversification strategies, complex information systems and are able to manage expenses well compared to small firms. This may have an impact on the financial performance of insurance companies in different ways for example large firms may be advantaged compared to smaller firms as they can be able to exploit economies of scale and scope; as such they are more efficient in their operations and as a result reap higher level of profits.

2.4 Empirical Review

Studies have been conducted both locally and internationally to support the relationship between technological innovations and financial performance, but these studies have produced mixed results.

2.4.1 Global Studies

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

ChingChuan, Sim, Kam, and Tan (2011) examined the factors affecting the adoption of mobile banking in Malaysia using empirical analysis. The Technology Acceptance Model (TAM) was used to measure the level of acceptance of mobile banking in Malaysia. The study's objective was to examine the association between constructs of perceived usefulness, perceived risks, perceived ease of use, social norms, perceived relative advantages and perceived innovativeness towards behavioral intention in the adoption of mobile banking. The study's findings revealed that perceived usefulness, relative advantages, perceived risks, personal innovativeness and perceived ease of use were the factors influencing mobile users' behavioral intention to adopt mobile banking services in Malaysia.

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

transactions. Therefore, the use of mobile phone could improve the provision of financial services in this segment and that economic and technological innovation, regulatory and policy innovation was required to extend this services.

Kumbhar (2011) evaluated alternative banking channels and customers' satisfaction among government and private sector banks in India. The study focused on the key factors that influence customer satisfaction in alternative banking service provided by public and private sector banks in India. These factors included age, education, and profession of the bank customers, service quality, brand perception and perceived value. The study data was collected using likert scale based questionnaires. Other factors such as quality of service, brand perception and perceived value were found to have a positive relation with overall customer satisfaction. The researcher found that there is a significant relationship between alternative banking and customer satisfaction. The study then concluded that banks should consider facts and enhance service quality of alternative banking services in order to increase customer's satisfaction.

Saluja and Wadhe (2015) examined the impact of E-banking on profitability of Indian commercial banks the period 2006 – 2014. The study sample consisted of 31 banks under four major bank groups of commercial banks in India. The study employed multiple regression analysis to test the effect of E-banking services on the profitability of commercial banks. The researcher established a positive effect between e-banking and profitability of both national and private sector commercial banks. The study also established an increase in profitability with the increase in number of ATMs. The study though established an insignificant relationship between number of branches and profitability of banks.

2.4.2 Local Studies

Munyoki (2013) analyzed the effect of online banking on the financial performance of Kenyan commercial banks. A descriptive research design was adopted and a study population of all the 43 commercial banks in Kenya. The primary data was collected through questionnaires while secondary data was from the annual reports issued by CBK. The study established a weak but positive and significant relation between online banking and financial performance of commercial banks in Kenya. The relationship is attributed to online bank cut costs, increase commission income, reduce staffing levels and make banking more convenient for customers. The researcher then recommended the banks' should address security concerns for the increasing online banking fraud cases.

Ndungu (2015) studied the impact of alternative banking channels on how financial institutions performed financially in Kenya. A descriptive research design was used, data was collected from banks yearly reports and reports issued by CBK. The study found that alternative banking channels such as mobile banking, agency banking, customer deposits and operating expenses causes a variation of 73.4% of the financial performance among commercial banks in Kenya. The research found out that the rate of usage of mobile banking had declined since 2012. The study then recommended that the banks management should adopt more alternative banking channels as well as exploiting more innovation that enhance alternative banking.

Kambua (2015) established the impact that agency banking had profitability of banks in Kenya using descriptive research design and a study population of 16 banks that had adopted agency banking. The study data was collected from general business publications, reports from and by financial institutions and CBK supervision reports.

The researcher found out there was a positive relationship between number of agents and financial performance of commercial banks. The researchers also found a positive relationship between factors such as cash deposits, volume of deposits, volume of withdraws and the bank's financial performance.

Ocharo and Muturi (2016) evaluated the relationship between alternative banking methods and profitability of the banks within Kisii County using the alternative channels such as agency banking, mobile banking, internet banking and automatic teller machine. The study adopted a descriptive research design. The study population comprised of 187 respondents of which 17 were managers and 170 employees of banks within Kisii County. The researchers found a significant correlation between alternative banking and the financial performance of the banking industry.

Mwiti (2016) examined the effects of alternative banking channels on the financial performance of commercial banks in Kenya. The study used six year (2011-2015) data for analysis. Regression analysis was used find out the effect of alternative banking channels on the financial performance of commercial banks in Kenya. The study indicated that there is a strong relationship between alternative banking channels and financial performance of commercial banks in Kenya. The study further established that mobile banking, ATMs banking, agency banking and internet banking affects financial performance of the commercial banks positively and in a statistically significant way.

2.5 Conceptual Framework

The conceptual model developed below portrays the expected relationship between the study variables. Independent variables will be mobile banking as measured by percentage change in value of mobile banking transactions per year, internet banking

given as percentage change in value of internet banking transactions per year, agency banking given by percentage change in value of agency banking transactions per year and ATM as measured by percentage change in value of mobile banking transactions per year. The control variables will be capital structure, liquidity and bank size. Operational efficiency will be the dependent variable that the study will seek to explain and it will be measured by operating expenses divided by total revenue.

Technological Innovations Mobile banking Internet banking Agency banking ATMs	→	**Operational Efficiency** Operating expenses divided by total revenue
Control Variables Capital structure Bank Liquidity Bank size	→	
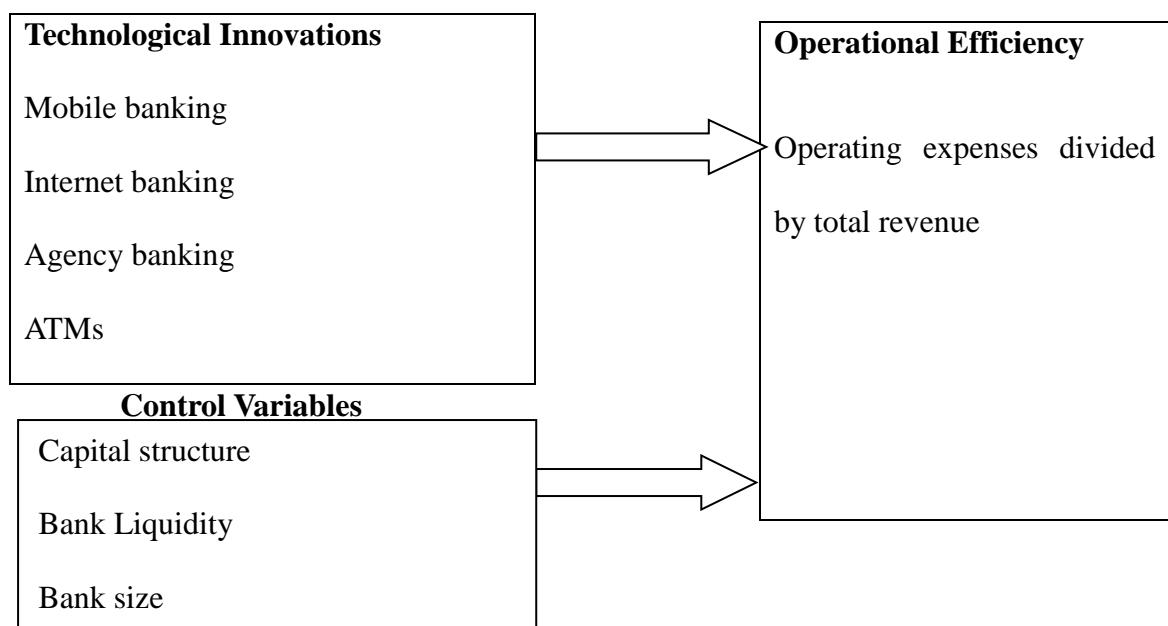
Source: Researcher (2018)

Figure 2.1: The Conceptual Model

2.6 Summary of the Literature Review

A number of theoretical frameworks have explained the theoretically expected relationship between alternative banking channels and efficiency of banks. The theories covered in this review are; technology acceptance model, financial intermediation theory and diffusion of innovation theory. Some of the key influencers of firm efficiency have also been explored in this section. A number of empirical studies have been conducted both internationally and locally on working capital

management and efficiency of firms. The findings of these studies have also been explored in this chapter.

The lack of consensus among international studies on the effect of alternative banking channels on operational efficiency of commercial banks is an enough reason to conduct further studies. The reviewed studies in the Kenyan context have either failed to show how the Kenyan commercial bank's efficiency is affected by alternative banking channels or consider just one channel of alternative banking. The current study intended to fill this research gap by investigating the effect of alternative banking on operational efficiency of commercial banks in Kenya. The technological innovations covered included internet banking, agency banking, mobile banking and ATMs.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In order to determine the effect of alternative banking channel on operational efficiency of commercial banks, a research methodology was necessary to outline how the research was carried out. This chapter has four sections namely; research design, data collection, diagnostic tests and data analysis.

3.2 Research Design

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

3.3 Population

This refers to all observations of interest in an entire collection like people or events as described by a researcher (Burns & Burns, 2008). This study's population comprised of the 42 commercial banks operating in Kenya as at 31/12/2017. Since the population is small, a census of the 42 banks was undertaken for the study (see appendix one).

3.4 Data Collection

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

3.5 Diagnostic Tests

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

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

tolerance levels were also carried out to show the degree of multicollinearity (Burns & Burns, 2008).

3.6 Data Analysis

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

$$Y= \alpha+ \beta_1X_1+\beta_2X_2+\beta_3X_3+ \beta_4X_4+ \beta_5X_5+\beta_6X_6+ \beta_7X_7+\varepsilon.$$

Where: Y = Operational efficiency of commercial banks as measured by operating expenses divided by total revenueon an annual basis

α =y intercept of the regression equation.

β_1, β_2, β_3, β_4, β_5, β_6, β_7 =are the slope of the regression

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

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

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

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

X_5 = Capital structure as measured by long term debt divided by shareholder's

28

equity and long term debt per year

X_6 = Bank liquidity as measured by the current ratio per year

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

ε =error term

3.6.1 Tests of Significance

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

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND INTERPRETATION

4.1 Introduction

This chapter focused on the analysis of the collected data from the Central Bank of Kenya to establish the effect ofalternative banking channels on operational efficiency of the Kenyan commercial banks. Using descriptive statistics, correlation analysis and regression analysis, the results of the study were presented in table forms as shown in the following sections.

4.2 Response Rate

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

4.3Diagnostic Tests

The researcher carried out diagnostic tests on the collected data. The research assumed a 95 percent confidence interval or 5 percent significance level (both leading to identical conclusions) for the data used. These values helped to verify the truth or the falsity of the data. Thus, the closer to 100 percent the confidence interval (and thus, the closer to 0 percent the significance level), the higher the accuracy of the data used and analyzed is assumed to be.

4.4 Descriptive Analysis

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

Table 4.1 above shows the descriptive statistics for the variables applied in the study. An analysis of all the variables was obtained using SPSS software for the period of five years (2013 to 2017) for all the 41 banks that provided data for this study. The mean, standard deviation, minimum and maximum for all the variables selected for this study are as shown in the table below.

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Firm efficiency	205	.079	.480	.21323	.074914
Mobile banking	205	4.323	5.588	5.08245	.326780
Internet banking	205	6.605	9.712	8.48059	1.167510
Agency banking	205	5.656	6.908	6.57928	.244055
ATMs	205	8.340	9.513	8.76517	.314658
Capital structure	205	.025	.969	.46090	.217898
Liquidity	205	.140	.948	.38181	.129532
Bank Size	205	6.794	8.703	7.68560	.534062
Valid N (listwise)	205				

Source: Research Findings (2018)

4.5 Correlation Analysis

The association between any two variables used in the study is established using correlation analysis. This relationship ranges between (-) strong negative correlation and (+) perfect positive correlation. Pearson correlation was employed to analyze the level of association between the commercial banks' operational efficiency and the

independent variables for this study (mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital structure).

The study found out that mobile banking, internet banking, agency banking, ATMs and capital structure have a positive and statistically insignificant correlation with the commercial banks' operational efficiency as shown by ($r = .010$, $p = .888$; $r = .001$, $p = .988$; $r = .105$, $p = .134$; $r = .080$, $p = .256$; $r = .037$, $p = .603$) respectively. The study also found out that a positive and significant correlation exists between liquidity and firm size with operational efficiency as evidenced by ($r = .389$, $p = .000$) and ($r = .172$, $p = .013$) respectively. Although the independent variables had an association to each other, the association was not strong to cause Multicollinearity as all the r values were less than 0.70. This implies that there was no multi-collinearity among the independent variables and therefore they can be used as determinants of dividend payout ratio in regression analysis.

Table 4.2: Correlation Analysis

		Firm efficiency	Mobile banking	Internet banking	Agency banking	ATMs	Capital structure	Liquidity	Bank Size
Firm efficiency	Pearson Correlation	1	.010	.001	.105	.080	.037	.389**	.172*
	Sig. (2-tailed)		.888	.988	.134	.256	.603	.000	.013
Mobile banking	Pearson Correlation	.010	1	.591**	.057	.214**	-.237**	.019	.069
	Sig. (2-tailed)	.888		.000	.419	.002	.001	.784	.323
Internet banking	Pearson Correlation	.001	.591**	1	.114	.397**	.194**	.009	-.007
	Sig. (2-tailed)	.988	.000		.105	.000	.005	.901	.921
Agency banking	Pearson Correlation	.105	.057	.114	1	-.105	-.012	-.179*	-.208**
	Sig. (2-tailed)	.134	.419	.105		.132	.862	.010	.003
ATMs	Pearson Correlation	.080	.214**	.397**	-.105	1	.323**	.003	-.003
	Sig. (2-tailed)	.256	.002	.000	.132		.000	.969	.964
Capital	Pearson Correlation	.037	-.237**	.194**	-.012	.323**	1	-.117	.032

structure	Sig. (2-tailed)	.603	.001	.005	.862	.000		.095	.644
Liquidity	Pearson Correlation	.389**	.019	.009	-.179*	.003	-.117	1	.138*
	Sig. (2-tailed)	.000	.784	.901	.010	.969	.095		.048
Bank Size	Pearson Correlation	.172*	.069	-.007	-.208**	-.003	.032	.138*	1
	Sig. (2-tailed)	.013	.323	.921	.003	.964	.644	.048	

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

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

c. Listwise N=205

Source: Research Findings (2018)

4.6 Regression Analysis

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

The study obtained the model summary statistics as shown in table 4.3 below.

Table 4.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.421[a]	.177	.148	.069146	1.934

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

b. Dependent Variable: Firm efficiency

Source: Research Findings (2018)

R squared, being the coefficient of determination indicates the deviations in the response variable that is as a result of changes in the predictor variables. From the outcome in table 4.3 above, the value of R square was 0.177, a discovery that 17.7percent of the deviations in operational efficiency of commercial banks is caused by changes in mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital structure. Other variables not included in the model justify for 82.3 percent of the variations in operational efficiency of the Kenyan commercial banks. Also, the results revealed that there exists a weak relationship

35

among the selected independent variables and the operational efficiencyas shown by the correlation coefficient (R) equal to 0.421. A durbin-watson statistic of 1.934 indicated that the variable residuals were not serially correlated since the value was more than 1.5.

Table 4.4: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.203	7	.029	6.065	.000[b]
	Residual	.942	197	.005		
	Total	1.145	204			

a. Dependent Variable: Firm efficiency

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

Source: Research Findings (2018)

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

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

significance. As such, a p-value above 0.05 indicates that the dependent variables have a statistically insignificant association with the independent variables. The results are indicated in table 4.5

Table 4.5: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.115	.261		-.440	.661
	Mobile banking	.008	.025	.033	.297	.767
	Internet banking	.005	.008	.074	.631	.529
	Agency banking	.001	.021	.004	.064	.949
	ATMs	.020	.018	.084	1.092	.276
	Capital structure	.020	.024	.057	.804	.422
	Liquidity	.220	.039	.381	5.716	.000
	Bank Size	.017	.009	.121	1.798	.074

a. Dependent Variable: Firm efficiency

Source: Research Findings (2018)

From the above results, it is evident that only liquidity that produced positive and statistically significant values for this study (high t-values, $p < 0.05$). Mobile banking, internet banking, agency banking, ATMs, bank size and bank capital structure were found to be statistically insignificant determiners of operational efficiency among commercial banks as shown by p values above 0.05.

The following regression equation was estimated:

$$Y = -0.115 + 0.220X_1$$

Where,

Y = Operational efficiency

X_1 = Bank Liquidity

On the estimated regression model above, the constant = -0.115 shows that if selected dependent variables (mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital structure) were rated zero, the commercial banks' operational efficiencywould be -0.115.A unit increase in bank liquidity will result in an increase in operational efficiency as indicated by 0.220 while a unit increase in mobile banking, internet banking, agency banking, ATMs, bank size and bank capital structurewould not have a significant influence on operational efficiency among commercial banks.

4.7 Discussion of Research Findings

The study sought to determine the association between alternative banking channels and operational efficiency of the Kenyan commercial. Alternative banking channels in this study was the independent variable in this study with four measures (value of mobile banking transactions per year, value of internet banking transactions per year, value of agency banking transactions per year and value of ATM transactions per year. The control variables were liquidity as measured by the current ratio, firm size as measured by natural logarithm of total assets and capital structure as measured by long term debt divided by both long term debt and shareholders' funds. Operational efficiency was the dependent variable which the study sought to explain and it was measured by the ratio of operating expenses to total revenue.

The Pearson correlation coefficients between the variables revealed thatmobile

banking, internet banking, agency banking, ATMs and capital structure have a positive and statistically insignificant correlation with the commercial banks' operational efficiency. The study also found out that a positive and significant correlation exists between liquidity and firm size with operational efficiency as evidenced by (r =. 389, p = .000) and (r = .172, p = .013) respectively.

The model summary revealed that the independent variables: mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital structure explains 17.7% of changes in the dependent variable as indicated by the value of R^2 which implies that the are other factors not included in this model that account for 82.3% of changes in the commercial banks' operational efficiency. The model is fit at 95% level of confidence since the F-value is 6.065.This shows that the overall multiple regression model is statistically significant and is an adequate model for predicting and explaining the influence of the selected independent variables on the Kenyan commercial banks' operational efficiency.

The findings of this study are in line with Munyoki (2013) who analyzed the effect of online banking on the financial performance of Kenyan commercial banks. A descriptive research design was adopted and a study population of all the 43 commercial banks in Kenya. The primary data was collected through questionnaires while secondary data was from the annual reports issued by CBK. The study established a weak but positive and significant relation between online banking and financial performance of commercial banks in Kenya. The relationship is attributed to online bank cut costs, increase commission income, reduce staffing levels and make banking more convenient for customers. The researcher then recommended the banks' should address security concerns for the increasing online banking fraud cases.

This study differs with Mwiti (2016) who examined the effects of alternative banking channels on the financial performance of commercial banks in Kenya. The study used six year (2011-2015) data for analysis. Regression analysis was used find out the effect of alternative banking channels on the financial performance of commercial banks in Kenya. The study indicated that there is a strong relationship between alternative banking channels and financial performance of commercial banks in Kenya. The study further established that mobile banking, ATMs banking, agency banking and internet banking affects financial performance of the commercial banks positively and in a statistically significant way.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the previous chapter, conclusion, limitations encountered during the study. This chapter also elucidates the policy recommendations that policy makers can implement to achieve the expected operational efficiency of the Kenyan commercial banks. Lastly the chapter presents suggestions for further research which can be useful to future researchers.

5.2 Summary of Findings

The study sought to examine the impact of alternative banking channels on the Kenyan financial bank's operational efficiency. The independent variables for the study were mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital structure. The descriptive cross-sectional research design was employed in the study. Secondary data was obtained from the Central Bank of Kenya and was analyzed using SPSS software version 21. The study used annual data for 41 commercial banks covering a period of five years from January 2013 to December 2017.

From the results of correlation analysis,mobile banking, internet banking, agency banking, ATMs and capital structure were found to have a positive and statistically insignificant correlation with the commercial banks' operational efficiency. The study also found out that a positive and significant correlation exists between liquidity and firm size with operational efficiency of commercial banks in Kenya.

The co-efficient of determination R-square value was 0.177 which means that about 17.7 percent of the variation in operational efficiency of the Kenyan commercial banks can be explained by the eight selected independent variables while 82.3 percent in the variation of operational efficiency was associated with other factors not covered in this research. The study also found a weak correlation between the independent variables and the commercial banks' operational efficiency (R=0.421). ANOVA results indicate that the F statistic was at 5% significance level with a p=0.000. Therefore the model was fit in explaining the association between the selected variables.

The regression results show that when all the independent variables selected for the study have zero value the operational efficiency of commercial banks will be -0.115. A unit increase in bank liquidity will result in an increase in operational efficiency as indicated by 0.220 while a unit increase in mobile banking, internet banking, agency banking, ATMs, bank size and bank capital structure would not have a significant influence on operational efficiency among commercial banks.

5.3 Conclusion

It can be concluded from the findings that the Kenyan commercial banks' operational efficiency is significantly affected by bank liquidity. The study therefore concludes that a unit increase in bank liquidity leads to a significant increase in operational efficiency of commercial banks. The study found that mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital structure are statistically insignificant determinants of operational efficiency and therefore this study concludes that these variables do not influence to a large extent the Kenyan commercial bank's operational efficiency

This study concludes that independent variables selected for this study mobile banking, internet banking, agency banking, ATMs, bank liquidity, bank size and bank capital structure influence to a large extent operational efficiency of commercial banks in Kenya. It is therefore sufficient to conclude that these variables significantly influence operational efficiency of commercial banks as shown by the p value in anovasummary. The fact that the seven independent variables explain 17.7% of changes in operational efficiency imply that the variables not included in the model explain 82.3% of changes in operational efficiency of commercial banks in Kenya.

This finding concurs with Munyoki (2013) who analyzed the effect of online banking on the financial performance of Kenyan commercial banks. A descriptive research design was adopted and a study population of all the 43 commercial banks in Kenya. The primary data was collected through questionnaires while secondary data was from the annual reports issued by CBK. The study established a weak but positive and significant relation between online banking and financial performance of commercial banks in Kenya. The relationship is attributed to online bank cut costs, increase commission income, reduce staffing levels and make banking more convenient for customers. The researcher then recommended the banks' should address security concerns for the increasing online banking fraud cases.

5.4 Recommendations

The study established that mobile banking, ATM banking, agency banking and internet banking have a positive association with the efficiency of commercial banks in Kenya. Thus the study wishes to make the following recommendations for policy change:Commercial banks in Kenya should invest heavily in alternative banking channels like mobile banking, ATMs, agency banking and internet banking since this

will lead to improvement in the operational efficiency of the banks. The Kenyan Government through the Central bank should come up with policies that create a conducive environment for commercial banks to operate in since it will translate to economic growth of the country.

The study found out that a positive relationship exists between firm efficiency and liquidity position. This study recommends that a comprehensive assessment of a firm's immediate liquidity position should be undertaken before investing in ay long term project as firm's liquidity has been found to be a significant determiner of firm efficiency.

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

5.5 Limitations of the Study

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

The biggest limitation in the study is the quality of the data. It is difficult to conclude from this research whether the findings present the true facts about the situation. The data that has been used is only assumed to be accurate. There is also a great

inconsistency in the measures used depending on the prevailing conditions. Secondary data was employed in the study which was already existent as opposed to primary data which was raw information. The study also considered selected determinants of and not all the factors affecting operational efficiency of commercial banks mainly due to limitation of data availability.

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

5.6 Suggestions for Further Research

This study focused on alternative banking channels and operational efficiency of commercial banks in Kenya and relied on secondary data. A research study where data collection relies on primary data i.e. in depth questionnaires and interviews covering all the 42 commercial banks registered with the Central Bank of Kenya is recommended so as to compliment this research.

The study was not exhaustive of the independent variables affecting operational efficiency of commercial banks in Kenya and this study recommends that further studies be conducted to incorporate other variables like management efficiency, growth opportunities, industry practices, age of the firm, political stability and other macro-economic variables. Establishing the effect of each variable on operational efficiency will enable policy makers know what tool to use when controlling the operational efficiency.

The study concentrated on the last five years since it was the most recent data available. Future studies may use a range of many years e.g. from 2000 to date and this can be helpful to confirm or disapprove the findings of this study. The study limited itself by focusing on financial institutions. The recommendations of this study are that further studies be conducted on other non-financial institutions operating in Kenya. Finally, due to the inadequacies of the regression models, other models such as the Vector Error Correction Model (VECM) can be used to explain the different associations between the variables.

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APPENDICES

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

1. African Banking Corporation Ltd.

2. Bank of Africa Kenya Ltd.

3. Bank of Baroda (K) Ltd.

4. Bank of India

5. Barclays Bank of Kenya Ltd.

6. CFC Stanbic Bank Ltd.

7. Chase Bank (K) Ltd.

8. Citibank N.A Kenya

9. Commercial Bank of Africa Ltd.

10. Consolidated Bank of Kenya Ltd.

11. Co-operative Bank of Kenya Ltd.

12. Credit Bank Ltd.

13. Development Bank of Kenya Ltd.

14. Diamond Trust Bank (K) Ltd.

15. Dubai Bank Kenya Ltd.

16. Ecobank Kenya Ltd

17. Equatorial Commercial Bank Ltd.

18. Equity Bank Ltd.

19. Family Bank Ltd

20. Fidelity Commercial Bank Ltd

21. First community Bank Limited

22. Giro Commercial Bank Ltd.

23. GTB Ltd

24. Guardian Bank Ltd

25. Gulf African Bank Limited

26. Habib Bank A.G Zurich

27. Habib Bank Ltd.

28. Housing Finance

29. Imperial Bank Ltd

30. Investment & Mortgages Bank Ltd

31. Jamii Bora Bank.

32. Kenya Commercial Bank Ltd

33. Middle East Bank (K) Ltd

34. National Bank of Kenya Ltd

35. NIC BANK

36. Oriental Commercial Bank Ltd

37. Paramount Universal Bank Ltd

38. Prime Bank Ltd

39. Sidian Bank Ltd

40. Standard Chartered Bank (K) Ltd

41. Trans-National Bank Ltd

42. UBA Kenya Bank.