

**TECHNOLOGY AS A STRATEGIC APPROACH TO IMPROVE
PERFORMANCE IN BANKING INDUSTRY, A CASE OF- BRANCHLESS
BANKING MODELS IN KENYA**

BY

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DECLARATION

I Abdullahi Mohamed Salat hereby declare that this Research Project entitled
TECHNOLOGY AS A STRATEGIC APPROACH TO IMPROVE
PERFORMANCE IN BANKING INDUSTRY, A CASE OF- BRANCHLESS
BANKING MODELS IN KENYA is my original work and has not been presented for
a degree in any other University.

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DEDICATION

I would like to dedicate this project to my two little angels, Esra and Mohamedweli for being the stress relaxers all the time.

ABSTRACT

This study seeks to investigate technology as a strategic approach to improve performance in banking industry, a case of branchless banking models in Kenya. Given that in the recent past, commercial banks in Kenya have geared towards adoption of technology as a strategy, the study sought to investigate three main issues. First is the effect of mobile banking, internet banking and online banking on banks profitability in Kenya. Secondly is the effect of mobile banking, internet banking and online banking on yield on Equity upon banks in Kenya. Besides is the impact of mobile banking, internet banking and online banking on banks market share in Kenya. The study adopted panel data analysis consisting of 23 commercial banks who offer branchless banking services for 2010 – 2015 period. Secondary data was mainly used to carry out the analysis with the information collected from questionnaires mainly used to capture the perceptions about branchless banking in Kenya. The main findings of the study reveal that adoption of technology by banks positively affects bank's profitability, shareholder's wealth as well as the banks market share. Mobile banking and internet banking positively and significantly affects bank's profitability, shareholder's wealth and market share. However, the effect of mobile banking seems to be higher than that of internet banking. This could be attributed to the increased mobile telephony coverage among the Kenyans. In addition, mobile banking platform is easier and cheaper to use as opposed to internet banking which require internet connection for one to do the transaction. As such the study advocates that banks stand to gain more in terms of profitability, maximization of shareholder's wealth and increasing market share by adopting mobile banking and internet banking as opposed to online banking. However, much preference should be given to mobile banking compared to internet banking. This is because the magnitude of the effect of mobile banking on profitability, shareholder's wealth and market share is higher than the respective magnitude of the internet banking. To improve efficiency in bank operations, Kenyan commercial banks should therefore strive to shift from traditional banking towards modern banking in their attempt to increase their market share by targeting the low income and rural households. This will help them in widening their customer base by adopting another means of distribution like mobile and online platforms for banking.

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ABBREVIATIONS

SSA – Sub Saharan Africa

MPESA – Mobile Money Transfer Service – Safaricom

GDP – Gross Domestic Product

ATM - Automated Teller Machine

POS – Point of Sale

ROE – Return On Equity

ROA – Return On Asset

CBK - Central Bank of Kenya

KBA – Kenya Bankers Association

ICT - Information, Communication and Technology

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The sectors in banking remains core and at the centre of any economy given the role it plays in necessitating efficient financial resources allocation. A keen look at the Sub – Saharan Africa banking industry it is evidently clear that the sector presents some significant level of underdevelopment.

Most regions of Sub-Saharan Africa are still underdeveloped in systems of banking relative to other growing countries. However, albeit the situation, gradual financial deepening can be seen to be gaining some momentum in most countries with the aim of putting such economies riding on the rails of financial sector development. The executives should consider information systems given their role in the contemporary organization, Laudon and Laudon (1991). Despite the effort, there exist possible challenges to such development in information systems which include markets size constraint, inadequate earnings, and weedy creditor rights and weak legal implementation platforms.

The role of technology in corporate management can be based on a number of theories. One of such is the innovation diffusion theory. According to Clarke (1995), innovation diffusion theory seeks to explain how internet and mobile banking innovations can be successfully adopted and integrated in commercial banks; operations.

Banks have of late intensively incorporated modern technologies in their operations. This has aided setting up of a detailed database that inform investigations and analysis on how advanced information technology financial space have affected bank operations both in front office and back office operations. This has therefore informed decisions to invest in information technology by banks. In addition, the disruptive innovation theory has proved to be of importance in shedding more light on the type of the technology that banks tend to adopt. The theory asserts that banking technology is disruptive given that its adoption tends to trade – off traditional banking.

Within the Sub-Saharan Africa region, banking industry in Kenya can be regarded as one of the broadest and more advances from the perspective of the uptake of new technological innovation. Out of the 43 financial institutions in Kenya, about Twenty-five of these institutions are locally owned and fifteen are foreign owned (CBK, 2015).

The environment, within which banks operates in the recent decade, calls for the change from the traditional financial intermediation role by commercial banks. Edwards et al (1995) states that there has been a substantial decline in the sources of funds; that financial institutions rely on mainly the demand deposits from the public. This has in turn influenced the financial profitability of the banks relying on traditional banking model. From the strategic management point of view, this has triggered the increased adoption of new banking models that leverage on technology, if banks must maintain their financial position and competitiveness. Further, Edwards *et al* (1995) postulates that the economic forces have bolstered the technological innovations within areas of banking that has witnessed innovations in areas of new

products from banks amid the increased competition in the industry. It can be viewed that Edwards *et al* (1995) clearly puts across that traditional banking is losing its space in the modern banking era thus it is associated with loss in profitability. This has therefore called for the need to diversify banking by adopting new activities that have higher returns. In fact, Sub Saharan African (SSA) Banks are typically high-cost operations with their overhead costs being almost 5% of their total assets.

In addition to high concentration of bank branches in urban centres, the SSA has exhibited the most – cost inefficient banking globally. Thus, interest rate and service charge are relatively high. Also, the traditional brick and mortar infrastructure and increasing market share through branch expansion is quite expensive due to the fixed cost element involved. Operations of the new branches take a substantial time to breakeven and the overall profitability of the bank is curtailed.

It is against this backdrop that commercial banks have begun to diversify into new and more cost-effective banking practices that bring higher returns at lower cost. At the helm of this back drop is the role of strategic management in the banking industry. Commercial banks have therefore resulted into application of technology as a tool in strategic management in order to counter the environmental challenges facing their operations. In Kenya, one of the main application of technology by commercial banks as a tool of strategic management is evidenced in the branchless banking models. More specifically, these are mobile banking, online banking and internet banking. This therefore call for the need for a holistic analysis of all these models arising from the application of technology and how they have impacted on commercial banks profitability, shareholder's wealth and market share, a task which this study seeks to

undertake. In doing so, the study was based on disruptive innovation theory, contemporary banking theory and innovation diffusion theory.

1.1.1 Concept of Technology

The economic environment, within which banks operates in the modern days, calls for a shift from the traditional financial intermediation role by commercial banks towards modern banking that is in tandem with the reality in addition for cutting costs as well as performing the financial intermediation process effectively. Edwards et al (1995) states that there has been a substantial decline in the sources of funds that financial institutions rely on mainly the demand deposits from the public. This has in turn influenced the financial profitability of the banks relying on traditional banking model. From the strategic management point of view, this has triggered the increased adoption of new banking models that leverage on technology if banks have to maintain their financial position and competitiveness. Further, Edwards *et al* (1995) postulates that the economic forces have bolstered the technological innovations in the banking space that has seen innovations in the form of new products from banks amid the increased competition in the industry. It can be viewed that Edwards *et al* (1995) clearly puts across that traditional banking is losing its space in the modern banking era as it is associated with loss in profitability. This has therefore called for the need to diversify banking by adopting new activities that have higher returns

Moreover, in a global context, the SSA has exhibited the most – cost inefficient banking. Consequently, the difference in interest rate together with the levels of fee charged on service are quite higher. Also, the traditional brick and mortar infrastructure and increasing market share through branch expansion is quite

expensive due to the fixed cost element involved. Operations of the new branches take a substantial time to breakeven and the overall profitability of the bank is curtailed. It is against this backdrop that commercial banks have begun to diversify into new and more cost effective banking practices that bring higher returns at lower cost.

In Kenya, the financial environment has transformed drastically in the last decade due to changes in market structure, but more so, because of the emerging branchless banking (Rosen, 2013). Branchless banking is the use of alternative banking model like computerised machines used by cashiers, banking on mobile in addition to banking through agents to deliver funding services. Branchless banking was initially intended to foster financial inclusivity among the Kenya population. The participants in the sphere of recognised sector are today appreciating advantages of embracing latest modes of service distribution to target the low-income and the rural population, this has been triggered by solid competition amongst commercial banks. (FSD, 2011,2012).

According to Neil and Leishman (2010), policy makers and regulators are showing attention toward then role of technology in banking industry. However, it is a fact that in most of the countries, regulations have contributed immensely to dampening the growth of the branchless banking model. In attempt to bank the unbanked, financial service providers have continually sought for new ways to offer financial services. According to (CGAP, 2006) instead of using bank branches and bank personnel, financial institutions are recently offering banking and payment services through postal and retail outlets among others non - bank avenues.

Other important strategic role of branchless banking is targeting a new customer segment, expansion of geographic coverage, creation of virtual bank without bank's physical infrastructure and promotes cost efficiency. However, these strategic roles of branchless banking are presumed hence the need for an empirical analysis into their effects.

1.1.2 Branchless Banking Models

According to European Investment Bank (2013), Kenya has posted impressive performance with regard to development in the financial sector regionally. In terms of ranking within sub-Saharan region, Kenya comes at position four preceded by Mauritius. Nigeria and South Africa take position two and one respectively. As at the end of 2015, Kenyan banking industry had 42 profit-making banks. 14 of these banks are overseas owned. Besides, these banks have established 1,475 branches throughout Kenya (CBK, 2015). Due to increased competition for limited market share coupled with increase in the level of sophistication of the current and potential customers, banks are now moving from the traditional product delivery channels to new and more cost efficient methods. These include internet banking, online banking, mobile banking, agency banking, ATMs and POS channels. Out of the five branchless banking models, it's clear that only agency banking model is not technology reliant.

Mobile banking service has been the most focused branchless banking model in Kenya due to the development and successful adoption of M-Pesa, a portable system of transferring money, the brainchild of Safaricom, Kenya in partnership with Vodafone (2007). According to CBK (2013) since M-PESA was pioneered as a platform there is increase in financial service provision and access at cost efficient

terms. Some of the Kenyan financial institutions that have integrated M-PESA into their mobile banking channels include, Equity Bank, Co-operative Bank, KCB, Barclays, Standard Chartered, NIC, Family Bank, Post Bank and Consolidated Bank. As at the end of 2013, meaningfully growth in mobile banking transactions was recorded, with total transaction averaging approximately 15 percent of the total GDP.

Online banking too is among the recent innovations in the financial industry. According to Malhotra (2009), Internet banking has been mostly used by bank managers for achieving efficiency in terms of reducing costs as well as speed up service provision hence translating into increased profitability of then banks.

Further he posits that internet banking will in the long run influence that diversification of the composition of financial products and services offered by banks.

In Kenya, internet banking is gaining popularity in especially among the sophisticated and technological savvy customers. Nyangosi and Arora (2008) while carrying out a research examined the implementation of digital technology within banks in Kenya and conclude that customers utilise the website of commercial banks to inquire on the bank products offered as well as checking their account balances among other uses.

As a consequence of increased financial outreach, commercial banks profitability is also expected to increase due to increased transaction incomes, economies of scale and cost efficiency brought about by increased contribution margins are a result of decreasing fixed costs.

In Kenya, many commercial banks can be seen to shift from traditional banking towards modern banking in their attempt to increase their market share by targeting the low income and rural households. Rosen (2013), highlights that commercial banks have widened their customer base by adopting other avenues of distribution like agent and mobile banking podiums. In addition, Nyangosi (2008) also observed that many Kenyan banks have come up with mobile banking, online banking together with other electronic banking services to boost means of reaching out to distributed consumers with the intent to enhancing accessibility and affordable of financial services to the unbanked population.

1.1.3 Firm performance

The adoption of branchless banking by commercial banks aided by technological evolution has of late gained acceptance, with the banks perceiving it as a competitive advantage. Referring to Arora and Nyangosi (2008), for instance, ATM is among the most widespread optional means of Kenyan banking. This survey concludes that 92 per cent of total banked Kenyans prefer ATM banking as the best model. The study further asserts that ATMs have gained popularity among services because of the fact that, they provide customers with around the clock access to banking services.

However, in the last few years, other channels like mobile banking have gained prominence and are currently offering customers convenient banking alternatives. To the financial institutions ATMs are far much cheaper than branches as a distribution strategy. The transaction cost per unit is much lower in ATM banking as compared to branch banking. ATMs therefore provide economies of scale especially in urban centers where many low value transactions are done.

On the other end, Point of Sale (POS) banking is also gaining prominence in Kenya. POS is one of the newest channels deployed by banks in Kenya. In as far as the cost of deployment of POS is concern, international benchmarks indicate that it will cost Kshs 5 per transaction while the capital cost of the POS machine is \$ 250 thus considered a low cost channel (FSD Kenya, 2007). This makes POS ideal for less transaction-saturated environment and can be best used hand in hand with other branchless banking models.

1.1.4 Banking industry in Kenya

The Kenyan banking industry has posted remarkable developments with fifty financial institutions, comprising forty-two commercial banks, one mortgage finance company and seven authorised non-operating bank holding companies (CBK 2016). Among the forty-two commercial banks in Kenya, twenty-five are locally owned. According to World Bank, 2010, in 2008, financial development as measured by private credit to GDP was 23.7% in Kenya compared to 12.3% for Sub-Saharan Africa. Centrally to other economies in SSA, Kenya has got a diversified financial sector comprising of banks, capital market and insurance and pension firms.

A keen review of the financial sector in Kenya, it's clear that the sector is bank – dominated with the banking industry with asset base of over Kshs. 1.3 trillion as at end of 2015. The banking industry in Kenya recorded an asset base Kshs2732.80 billion as at December 2013 compared to Kshs 2513.50 and Kshs 2616.20 billion in June and September 2013. This indicates a significant rise over the years.

Due to increased competition for limited market share coupled with increase in the level of sophistication of the current and potential customers, banks are now moving from the traditional product delivery channels to new and more cost efficient methods. These include internet, online, mobile and agency banking, ATMs and POS channels. In Kenya agency banking is a new idea born in June 2009. Agent banking was initially meant to bridge the gap in financial inclusivity, that was too low with 32 per cent according to Fin Access study conducted in 2009.

The Kenyan Central Bank released regulations governing the agency banking model in Kenya were released in February 2011 and the uptake of this service in terms of the number of agents and agent's transactions has been tremendous. Currently there are over 19,000 retail agents with transactions amounting to billions of shillings (CBK 2013). The successful mobile money transfer platform (M-PESA) in Kenya triggered more interest in mobile banking service in the banking industry.

1.2 Research Problem

The previous periods has seen a paradigm shift in the banking sector especially with regard to the environment within which banks operate in. Both domestic and factors from outside have impacted its operations and structure (Panayiotis et al, 2008). The universal economic disaster spills over effects have forced the commercial banks to embark on improving their efficiency as well as building up their financial reserves. These changes in the environment within which banks operate have seen devising of various mechanisms to cushion the banks from any possible risks. These proactive measures range across technology based measures to non-technology based measure such as the introduction and implementation of Basel III among other measures.

In Kenya, due to the ever-increasing competition for market share, most of the banks have invested heavily in automation and implementation of complex and expensive banking systems, to gratify the increasing multiplex customer requirements and challenges faced universally. Some of the key innovations in the financial sector include the increasing use of branchless banking channels like mobile banking and agency banking. Since the introduction of branchless banking in the Kenyan banking sector there have been arguments and counter-arguments about their impact on the banks financial performance. For the agency banking, ever since its inception in 2010 tremendous growth has been realized with the cumulative value of the total agency banking transaction standing at Kshs. 366.8 billion as at the end of the third quarter of 2013 (CBK). In addition, the value of mobile banking transaction stood at approximately 15 percent of the total GDP. These facts are clear evidence that the branchless banking in Kenya cannot be understated. On the back of these innovations of branchless banking is the application of technology within the realms of strategic management.

Vast empirical works have been conducted with regard to the use of technology as a strategic approach in the banking arena. Agboola (2004), concludes that the planning and deciding on what product and services a bank should offer is highly affected directly by information communication technology.

De Young (2005) finds out that the online De novo banks are unprofitable this is because of small size of the firm compared to current De novo banks. Young ascribes this to the low business volumes. His results concur with Delgado, Hernando, and Nieto (2006) who report technology-based scale economies among the European

Internet banks. Agbolade (2011) reports a positive correlation between ICT and banks profitability in Nigeria. Further Adesola and Oyeniya (2013) conclude that the speed of service delivery, the profitability and performance of the workers is highly influenced by ICT. Rajput and Gupta (2011) in their study reported a significant and improved trend in the performance of the banks that adopted the information technology.

In the Kenyan context, Gakure and Ngumi (2013) in their study found out that advances in banks had a big impact on bank profitability. Kombe and Wafula, (2015) allude to the fact that adoption of technology within banks comes with faster service delivery and quality improvements as opposed to cost cutting as observed by other authors.

However, a review of the empirical studies in the Kenya context majority of the studies look at one innovation at a time mainly focusing on mobile banking, ATMs and internet banking. The effects of Point of Sale (POS) and agency banking models in Kenya have not been explored. In addition, no study compared these technological branchless innovations to analyse which of the innovation out of all the branchless models are more efficient than the others. The survey strives to eliminate these differences by analysing the effects of all the technology-based branchless innovation models on the banks' performance within the same empirical model. This is informed by the fact that Kenya banks are using a combination of these innovations and not one innovation in particular.

Despite this recent technology-based innovation among the Kenya commercial banks, the question is, what is the role of technology considering the operations of banking sector through the three branchless banking models? More so, if this effect exists, which of the three technology-based branchless banking models has been effective in transforming banks operations in terms of their profitability, shareholders' wealth and market share? These issues remain unexplored within the Kenyan context. To answer these questions therefore, it calls for the need to carry out an investigation on technology as a strategic approach to improve commercial banks' performance, a gap that this study seeks to fill.

1.3 Research Objectives

The major goal of this research is to establish the role of technology in strategic management in banking industry performance, a case study of branchless banking models in Kenya . More specifically, the study seeks:

- i. To investigate the effect of mobile banking, internet banking and online banking on banks' profitability in Kenya.
- ii. To investigate the effect of mobile banking, internet banking and online banking on banks' Return On Equity (ROE) in Kenya
- iii. To determine the effect of mobile banking, internet banking and online banking on banks market share in Kenya.

1.4 Value of the Study

In terms of the value of the survey in practical terms, it will be of value in different ways. To begin with is the value of the survey to the management of commercial banks. The environment in which banks operate in Kenya has become quite

competitive and bank management are constantly searching for latest and most useful ways of carrying out the business in line of raising the wealth of shareholders. The banking sector faces tough competition due to reduced number of customers and product similarity. Business expansion in order to increase incomes and attract a larger customer base is also being faced by challenges of inefficiency and redundancy. Therefore, a banking model which enables banks to expand their provision of banking services in a cost effective way will be highly welcome and will provide a definite competitive advantage to the banks which use it. The findings of this survey would be of great importance to the managers in making decisions, efficiently managing market penetration and cost by considering branchless banking models as a strategy.

In terms of scholarly work, this study would be of value to the present information on the role of technology in operation of banks via branchless banking models. It's evident that there exists very little literature specifically on branchless banking in Kenya and this study looks to supplement the available literature on the subject. Moreover, the existing literature tends to look at one model at a time and give little recognition to the role of technology in implementing these models. This study on commercial banks' performance would provide more elaborate and current information that will build up on the existing literature as well as informing areas of further study in addition to providing reference for future studies in this area.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Covered at this stage is the revision of literature upon which the survey is based on. More specifically, it covers theoretical literature review, empirical literature review and the overview of literature and the research gap that the study seeks to fill in.

2.2 Theoretical underpinning

The corporate world today has evidenced radicle changes given the high levels of competition. One of such changes has risen from technology advancement which has made corporates inevitable in adopting technology to reengineer themselves hence ensuring their survival.

Vast literature exists on how the adoption of technology as a strategic management tool has enabled the corporates thrives even in the challenging business environment. A number of theories exist in regard to the role of technology (innovation) as a tool of strategic management.

2.2.1 Disruptive Innovation Theory

The disruptive innovation was proposed by Professor Clayton Christensen in 1998.

This theory is important in exploring the type of the technology a certain bank chooses to adopt. Its name is derived from the fact that technological advancement within the banking industry tends to trade – off traditional banking. As such, according to this theory any uptake of new technology by banks tends to disrupt the

old ways of doing business by commercial banks. Such disruption therefore tends to bring about a shift in terms of efficiency in service delivery, the speed of offering banking services, reaching more clients who were unable to access financial services in the past and eventually increased profitability.

2.2.2 Contemporary banking theory

Contemporary banking theory is attributed to the works of Bhattacharya and Thakor (1993). The theory asserts that financial institutions are at the centre of providing financial intermediation thus promoting efficient allocation of financial resources in the economy. More importantly is the fact that contemporary banking theory sheds light into the possibility of information asymmetry in the banking business whereby different parties possess different information which they can use for their own advantage. This information asymmetry further yields into the problems of moral hazard and adverse selection which could lead to the collapse of the credit market in totality.

2.2.3 Innovation diffusion theory

An innovation is defined as any knowledge, routine or object that is seen fresh by members of the social arrangement. Diffusion of innovation is described as the process by which the innovation is conveyed through particular means for a period of time between members of social arrangements Peterson and Mahajan (1985). The concept of innovation diffusion tries to discuss the means through which new ideas, that is mobile and online banking is implemented and become effective Clarke (1995). Not all innovations are implemented even if they are the best. They might take some time for them to be embraced Sevcik (2004). More so, he asserted opposing

change could be an impediment to spread of innovation even though it may not stop the innovation but slow it down. The current survey on the banking sector offers useful information on the development of technology and innovation. Banks employ latest technologies and the information available on this sector ensures surveillance of impacts of development in both Information and financial technologies and together with front-office and back-office technology. Data on banking sector enables one to explore examples in which specific changes in technology can be manifested and their effects estimated.

2.3 Empirical literature review

Vast experimental research have been carried out with regard to the role of technology as a tool of strategic management in corporate performance, banking sector being one of them. According to a study by McKinsey and Company (2014) on the effect of digital funding on the bank functionality in Europe. Their study postulates that retail banks across Europe have digitized 20- 40 percent of their systems; 90 percent of European banks invest less than 0.5 percent of their total spending on technology. As a result, most have relatively shallow digital uptake focused on enabling basic customer transactions. The study estimate that digital transformation will put upward of 30 percent of the revenues of a typical European bank in play, particularly in high-turnover products such as personal loans and payments. We also estimate that banks can remove 20 to 25 percent of their cost base by leveraging this digital shift to transform how they process and service.

Put together, the economics of a digital bank will give it a vast competitive edge over a traditional incumbent. It's fair to say that getting digital banking right is a do-or-die

challenge. However, McKinsey and Company (2014) reports that despite the possible benefits, European banks have been reluctant in automating their operations. The slow transformation in banks' adoption of digital banking could be attributed to executive's narrow view on digital transformation, that of a stand-alone front-end features such as mobile apps or online product-comparison charts.

In addition, some of the banks point to security and risk concerns as justification for their slow approach, but this is a contrast to other industries. The airline industry, arguably beset by even stronger risk concerns, has automated just about every aspect of its customer experience in the last ten years, boosting customer service without compromising safety. Freedman (2000) argues that internet banking bolsters access to new devices as well as financial services with ease.

According to Radecki, Wenninger, and Orlov (1997) increase in bank size may be a function of technological innovations. This is perhaps through the creation of new services hence enjoying economies of scale. Improved revenue scale efficiencies can as well be deemed to be arising from technological progress. This is evident whenever technological change creates new services or improved quality that increase revenues or if the technological change improves the risk-expected return frontier and banks take some of the benefits in higher expected returns as alluded to by (Berger, Humphrey, and Pulley 1996) Berger, Hancock, and Humphrey (1993), Berger and Mester (1997) and Clark and Siems (1997) report that the effects of scale on bank profit efficiency are uncertain, with large banks enjoying profit efficiency at times, small banks on another time while sometimes about equal for large and small banks.

Geographical expansion of banking organizations can also be underpinned on the technological advancement within the organization. With the new technology, an organization can easily reach clients who are far away without having to set up a physical branch. This in turn aids in cutting down the costs and any possible risks associated with the running of physical branch office. The above sentiment on managerial diseconomies of scale and geographical expansion is raised by Czynak and Hannan (2000), Petersen and Rajan (2002), Wolken and Rohde (2002) all of who examine the on the effects of distance on banks efficiency.

According to Zeithaml (2000), perceived internet banking as an ideal model for bringing about improved organizational performance hence building competitive advantage for the organization that adopts it.

Bhuiyan (1997) asserts the developing countries like Kenya can experience rapid growth in markets and that this growth would probably continue until markets mature and become competitive since business organizations focus on information technology in order to improve performance (Kasekende, 2008). IT has the potential to affect process and hence skill levels. Therefore, internal communication within the organization is as well influenced by internet technology (Proenca & Rodrigues, 2011).

Bresnahan (1997) and Dabhokar (1994) posit that there was an underutilization of internet banking in 1990s hence its full potential within the banking industry was unrealized. Further, according to Joseph and Stone (2003) stiff competition facing the financial institutions in the recent past have led to reactive action by these institutions towards embracing internet banking in order to remain at the competitive edge. This

argument is further supported by Ennew (1996) who assert that loss of customer is the only expected consequence for a financial institution who neglects internet banking.

Aragba-Akpore (1998) Ovia (2000) and asserts that ICT adoption among Nigerian banks is inevitable given its benefits in terms of offering flexibility to customers as well as promoting the usage of cashless transactions.

In investigating the impact of computer automation on the banking services in Lagos, Agboola (2001) reports that the quality of services to bank clients has improved with the mainstreaming of electronic banking in Nigeria. Further the adoption of electronic banking has increased the uptake of e-commerce. The study thus advocates for the automation of bank operations within Lagos. Further, Furst, Lang, and Nolle (2002) find that U.S. national banks (by the end of the third quarter of 1999) were more likely to offer transactional websites upon adoption of online banking thus lowering fixed costs while at the same time raising the non-interest income.

According to Agboola (2004), he asserts that the decisions of the banks managers with regard to which financial product and service to offer as well as how to effectively offer such product and service revolves mainly on the adoption of technology as a strategic tool. Such adoption with thereby reflects benefits to the bank in terms of high speed of service delivery as well as improved product and service quality.

De Young (2005) allude that the low business volumes among the Internet de novo banks can be attributed to the low profitability in such banks as compared to

conventional de novo banks. These results are in tandem with the results by Delgado, Hernando, and Nieto (2006) who report technology-based scale economies among the European Internet banks.

Agbolade (2011) relates bank profitability among Nigerian banks to be greatly determined by ICT. Similar results are evidenced by Adesola and Oyeniya (2013) who relates bank profitability, speed in customer service delivery, and improved quality of services among Nigerian banks to be emanating from effects of information and communication technology.

Upon employment of Data Envelopment Analysis methodology, Rajput and Gupta (2011) comes into conclusion that Indian bank's performance is highly attributed to mainstreaming ICT within the banks' operations. Abdelatif *et al* (2014) asserts that increase in productivity and improving service quality in banks can be urged to be arising from adoption of ICT Algerian banks. This comes in hand with increased customer loyalty.

In the Kenyan context, Gakure and Ngumi (2013) did a study on whether bank innovations influence profitability of commercial banks in Kenya and concluded that bank innovations had a statistically significant influence on bank profitability. The study affirms that increased earnings and reduced costs among Kenyan banks can be ascribed to technological innovations arising from mobile banking, internet banking and more recently the agency banking.

Study by Gakure and Ngumi (2013) find that the incomes of commercial banks in Kenya are not greatly influenced by technological innovations among banks. The study advocates for provision of more incentives to trigger more investment towards

technological innovations if such innovations are to influence banks' incomes significantly. Provision of incentives for technological transfers would also be core in increasing the effectiveness of technology in banking.

Other research by Mwanja and Muganda (2011) report mixed results regarding the effects of innovations on bank performance, however, Mwanja and Muganda (2011) agreed that financial innovation had is a major contributor to bank performance. Kombe and Wafula, (2015) found that faster delivery of banking services and high quality services came about by the bank adopting ICT as opposed to cost cutting as advocated for by other authors in this area.

From the reviewed literature, an extensive body of empirical literature exists as to the effects of technology and innovation on the banking sector performance both worldwide, and Kenya in particular. However, in the Kenya context majority of the studies look at one innovation at a time mainly focusing on mobile banking, ATMs and internet banking. The effects of Point of Sale (POS) as a technological branchless banking model in Kenya have not been explored. In addition, no study compared these technological branchless innovations to analyse which of the innovation out of all the branchless model innovations are more efficient than the others. This study seeks to fill in this gap by analysing the effects of all the branchless innovation models on the banks' performance within the same empirical model. This is informed by the fact that Kenya banks are using a combination of these innovations and not one innovation in particular.

Table 2.1: Summary of Literature Review (Empirical and Theoretical Literature reviews)

Study	Study focus/main objectives	Methodology	Findings	Knowledge gaps
Zeithaml et al. (2000)	Examining the dimensions of electronic service quality for internet banking services	Qualitative and quantitative approach	internet-banking motivates customers and leads to customer satisfaction	Only focused at internet banking alone
Agboola (2001)	electronic payment systems and telebanking services in Nigeria.	Empirical analysis	quality of services to bank clients has improved with the mainstreaming of electronic banking	Only focused at electronic payment in the banking alone
Agbolade (2011)	Effects of ICT on bank profitability among Nigerian banks	Ordinary Least Square approach	Positive correlation exists between ICT and banks' profitability in Nigeria	Ordinary Least Square approach assumes a linear relationship among the variables which may not be the case

Gakure and Ngumi (2013)	The Effects of Innovations on Bank Performance: The Case of Electronic Banking Services in Kenya	dynamic panel data method	Increased earnings and reduced costs among Kenyan banks can be ascribed to technological innovations	Focused on the effect of technology on ROE and ROE. The study does not bring market share into picture
Kombe and Wafula, (2015)	effects of internet banking on the financial performance of commercial banks in Kenya	Empirical analysis	online banking on the performance of the banking sector mainly refers to time reductions and quality improvement rather than cost	Only focused on online banking and not other branchless banking that leverage on technology
Mwania and Muganda (2011)	impact of financial innovations on bank performance	Qualitative and quantitative approach	Financial innovation had significant contribution to bank performance.	Looks at financial innovation in aggregate but fails to breakdown the effects of mobile, internet and electronic banking

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Covered in this chapter is the research methods that the study seeks to apply. More specifically, it deals with research design, target population for the study, the sampling design that was applied in selecting the sample, collection of data and finally analysis of the data.

3.2 Research design

Survey plan is the overall strategy that is employed to logically organize all the components of the study into one. It's therefore the guiding principle on how the study was carried out. For this study, quantitative research designs was employed. By applying quantitative research design, the study specifically employed the causal research design to bring out the relationship between the technology in strategic management and the operation of banking sector. By this, the study investigated how the application of technology in the banking industry through the three main branchless banking models that rely on technology have affected banks' performance in terms of profitability, Return On Equity (ROE) and market share.

The application of causal research design in the study was adopted mainly for three reasons, first it helped in understanding causative parameters, and which parameters are the impact and secondly, it aided in determining the nature of the relationship between the causal variables and the effect predicted and thirdly, was the

determination of the magnitude of the effect of the independent variables on the dependent variables.

3.3 Target Population

According to Mugenda and Mugenda (2003), target population is described as the total number or the whole of persons, events or objects that the surveyor wishes to study. For this study the target population was the forty two commercial banks operating in Kenya as at the year 2016.

3.4 Sample design

A sample is a subsection and representation of the target population that is chosen for survey and it consists of selected members from the population. It's notable that a sample that fully represents the population yields credible results which can be generalized for the entire study population. However, any sample that falls short of fully representing the entire population yields biased results which cannot be replicated for the entire population.

Sampling technique on the other hand is the process used in selecting a sample out of the population for the study. For this study, purposive sampling was applied. This is a non – probability sampling design. The design was applied since the study seeks to focus on the banks which have been operating all the mobile banking, online banking and internet banking for the last three years. Therefore by applying purposive sampling we were able to study the banks which in the last three years have been applying all the three branchless banking models that utilize technology. These banks in total therefore yielded our sample for the study.

3.5 Data collection

The study utilized secondary and primary data. Available data on commercial banks that have used mobile, internet and on-line banking was collected from Kenya Bankers association (KBA) and Central Bank of Kenya (CBK). Primary data was collected through a questionnaire with close and open ended questions administered to the management staff of the commercial banks that are using mobile, online and internet banking. The targeted respondents were senior management staff in the respective banks located at the Head offices. On the banks performance, banks profitability was measured by Return on Assets (ROA). On the shareholder's wealth, Return on Equity (ROE) was used while on the market share, the number of net assets of a bank in proportion to total banking industry's net assets was used. As such the data on ROA, ROE and market share in terms of nets assets was obtained from Central Bank of Kenya (CBK). On the branchless banking models that use technology, data on the revenues from mobile banking, online banking and internet banking was obtained from the Kenya Bankers Association (KBA).

3.6 Data Analysis

With regard to the data analysis, the study estimated the panel data. Therefore, panel data regression was carried out. More specifically the pooled regression model was run to determine the effects of the technology based branchless banking models on the banks' performance. Upon running the model, hypotheses testing was done with the view of answering the research questions and thereby achieving the objective of the research.

The following three models were estimated.

$$ROA_{it} = \beta_1 + \beta_2 Mobilebanking_{it} + \beta_3 Onlinebanking_{it} + \beta_4 Internetbanking_{it} + u_{it} \dots 1$$

$$ROE_{it} = \beta_1 + \beta_2 Mobilebanking_{it} + \beta_3 Onlinebanking_{it} + \beta_4 Internetbanking_{it} + u_{it} \dots 2$$

$$MktShare_{it} = \beta_1 + \beta_2 Mobilebanking_{it} + \beta_3 Onlinebanking_{it} + \beta_4 Internetbanking_{it} + u_{it} \dots 3$$

Prior to estimating the models, diagnostic tests on correlation, unit roots and heteroschasticity was done to ensure that the estimates of the model were efficient.

The data was analyzed using STATA software.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter deals with the analysis of data, results and discussion of the results. More specifically, the chapter covers descriptive statistics of all the variables mainly the mean values, minimum and maximum values, variance, standard deviation and the statistics on the distribution of the respective variables which are kurtosis value and skewness values. In addition, the chapter covers correlation analysis among the variables as measured by the correlation coefficient matrix. Further the chapter covers the regression analysis and hypothesis testing. Finally, discussion of research findings is also covered in this chapter.

4.2 Response Rate

To collect the primary data, 42 questionnaires that were shared, however only 32 questionnaires were returned; of this only 23 questionnaires had the relevant data required for the analysis since these are the banks who offer mobile banking, online banking and internet banking products. This translates to a percentage of 55% hence the results were valid for statistical analysis. Nine of the banks who responded indicated that they are yet to venture in any kind of branchless banking hence they were excluded from the study. We point that the study mainly used secondary data to carry out the regression model and other analysis. Primary data was only used to get the perceptions bankers on the branchless banking.

A total of 23 valid questionnaires were received. Of the 23 respondents 35% were working in the Finance Department 40% were staff in MIS department and the remaining 25% were staff

in the Strategy department. In terms of seniority 40% of those who responded were senior management and 60% were middle level managers. Based on bank's classification by market size index, 26% were from large peer group, 26% were medium peer group and 48% were from small peer group. Below chart shows the graphical distribution of respondent banks by market size index.

Figure 4.1: Distribution of responses by bank tiers

	Frequency	Percent	Cumulative
Large tier group	6	26	26
Middle tier group	6	26	52
Small tier group	11	48	100
Total	23	100	

Source: Field data

4.3 Data Validity

Pilot test and the main survey were used to validate the questionnaire used for the study. The pilot testing of the questionnaire was done through a sample size of 23 banks who offer mobile banking, online banking and internet banking which returned a Cronbach alpha coefficient of 0.7045. This was slightly above the 0.7 benchmark thus confirming the validity of the tool.

4.4 Descriptive Statistics

The descriptive statistics of all the variables of the model are reported in table 4.1 that mainly consist of the mean, minimum and the maximum values of the respective variables, the mean values. The measures of dispersion of the model variables are measured by variance and standard deviation values. For the nature of distribution of

the variables, the skewness statistic and kurtosis values show how the variables are distributed.

Table 4.1: Descriptive Statistics

	Min	Max	Mean	Variance	Std. Dev	Skewness
ROA	- 4.8	10.4	3.57	4.5262	2.1275	-0.7820
ROE	-76.6	44.0	2.27919	246.9574	15.7149	-3.0371
Market Share	0.01	32.88	2.1494	24.1902	4.9184	3.7241
Online banking	2368	40098.41	669.5424	1.59e+07	3983.827	8.9025
Internet banking	5839	13669	608.4672	3485914	1867.06	4.7670
Mobile banking	84918	234729	10836.04	1.59e+09	39825.15	4.2714

Source: Field data

Table 4.1 presents the descriptive statistics and we find that for the 2010 – 2015 period the ROA of all the banks averaged at 3.57 percent while that of the ROE averaged at 2.79 percent. The highest ROA for banks sampled was 10.4 percent with that of ROE being 44 percent. In total, there were 138 observations. These were obtained from the 23 commercial banks offering mobile banking, online banking and internet banking for the 6-year period ($23 \times 6 = 138$). In terms of the measures of dispersion, revenue from mobile banking platform had the highest deviation from its mean value of 39825.15 with ROA having the least deviation from the mean value of 2.1275. In terms of variable distribution, ROA and ROE have negative skew meaning that they are skewed to the left while market share, mobile banking, online banking and internet banking revenues are skewed to the right. All the variables are however non – normally distributed as evidenced by their respective kurtosis values. None of the

variables has a kurtosis of 3.0 which is a requirement for normally distributed variables. However, statistically this is expected for the financial data since they are known to exhibit non – normality.

4.5 Correlation Analysis

Correlation analysis is core in that it shows how the variables are related to each other prior to running the actual regression model. If the independent variables are highly correlated, then the coefficients of the regression model are biased and inconsistent. This is because, if the independent variables are highly correlated then the economic model suffers from the problem of multicollinearity and as such the coefficients obtained are inefficient. From the analysis, the correlation analysis is presented in the correlation matrix.

Table 4.2: Correlation matrix

	ROA	ROE	Market Share	Online banking	Internet banking	Mobile banking
ROA	1.000					
ROE	0.869	1.000				
Market Share	0.1418	0.1823	1.000			
Online banking	0.0185	0.0283	-0.0335	1.000		
Internet banking	0.1644	0.0853	0.2428	0.0385	1.000	
Mobile banking	0.0276	0.0278	0.2079	0.0162	0.4733	1.000

Source: Field data

Table 4.2 presents the spearman’s correlation among the dependent and the independent variables. From the results, we find no solid correlation between

individual dependent variables and the respective independent variables. As such since there are no variables that are strongly correlated, then we proceed to running the regression model without the need to eliminate any variable for the model.

4.6 Diagnostic tests

Table 4.3 Unit root / Stationarity test results

	P statistic	Z statistic	L* statistic	Pm statistic
ROA	238.4583 (0.0000)	-4.3674 (0.0000)	-10.627 (0.0000)	20.065 (0.0000)
ROE	340.6478 (0.000)	-4.9676 (0.000)	-15.895 (0.000)	30.719 (0.000)
MS	191.3140 (0.000)	-2.2409 (0.000)	-7.0854 (0.000)	15.150 (0.000)
Mobile Banking	61.6141 (0.000)	-2.8858 (0.000)	-7.517 (0.000)	1.6279 (0.000)
Online banking	87.4356 (0.000)	-0.2422 (0.000)	-3.3230 (0.000)	4.3200 (0.000)
Internet banking	10.719 (0.000)	-1.6101 (0.000)	-1.5416 (0.000)	-3.6783 (0.000)

Source: Field data

Table 4.3 presents the root unit results and we look at different statistics and their corresponding probability values. From the results, it's clear that the p – values for the statistics are major 0 percent. Since the p – values are less that 5 percent significance level (0.05) then we reject the null hypothesis and accept the alternative hypothesis implying that there are no unit roots in the panels.

Table 4.4 Serial correlation test

	LR chi2	Prob > chi2
Model 1	92.76	0.000
Model 2	179.68	0.000
Model 3	106.83	0.000

Source: Field data

Table 4.4 presents panel data and it is clear that the panels are heteroscedastic thus serially correlated. This is as a result of the probabilities of all respective LR chi2 statistics being less than 0.05 (5 percent significance level). We therefore conclude that the problem of heteroschasticity within the panels exists.

To deal with the issue of serial correlation, we estimated the models through the generalised least squares method. This was further supplemented with the robust standard error estimates. This will ensure that the coefficients obtained will be free of serial correlation problem.

4.7 Regression Analysis and Hypotheses Testing

Hypothesis one sought to investigate the effect of mobile banking, internet banking and online banking on banks profitability in Kenya. To attain this, the random effects models were estimated using the generalized least square methods in addition to the robust standard errors thus they were free from serial correlation problem. Given the large figures for the variables since the variables are on financial data we take logarithms to standardise the data.

Table 4.5 Regression analysis for model 1 with ROA as the dependent variable and hypothesis testing results for effects of mobile banking, internet banking and online banking on bank profitability

	ROA			
	Coef.	Robust Std. Err.	z - stat	P> t
Mobile Banking	0.0050	0.00011	8.81	0.000
Online banking	0.0070	0.00760	0.88	0.380
Internet banking	0.0010	0.00051	9.89	0.000

Source: Field data

Table 4.5 presents the results and we find that mobile banking revenue and the internet banking revenue positively significantly influence ROA at 5 percent significance level. However, for online banking revenue, is positively affects the ROA though not significant since its respective probability value of the t-statistic is greater than 0.05. Turning to the individual hypothesis tests in attempt to find the effect of mobile banking, internet banking and online banking on banks profitability. For mobile banking, the results indicate that a one percent increase in mobile banking revenue increases ROA by 0.005 percent holding other factors constant. As for the internet banking revenue, the results indicate that a one percent increase in internet banking revenue increases ROA by 0.001 percent ceteris peribus.

Hypothesis two sought to investigate the effect of mobile banking, internet banking and online banking on shareholder's wealth as measure by Return on Equity. To accomplish this, the random effects models were estimated using the generalized least square methods and also to the robust standard errors hence they were free from serial

correlation problem. Given the large figures for the variables since the variables are on financial data we take logarithms to standardise the data.

Table 4.6 Regression analysis for model 2 with ROE as the dependent variable and hypothesis testing results for effects of mobile banking, internet banking and online banking on shareholder’s wealth.

	ROE			
	Coef.	Robust Std. Err.	z - stat	P> t
Mobile Banking	0.0047	0.0006	7.93	0.000
Online banking	0.001	0.0001	0.17	0.867
Internet banking	0.0009	0.0000	4.31	0.000

Source: Field data

Table 4.6 presents the results and we find that mobile banking revenue and the internet banking revenue positively significantly influence ROE at 5 percent significance level. However, for online banking revenue, is positively affects the ROE though not significant since its respective probability value of the t-statistic is greater than 0.05 given that its p- value is 86.7 percent. For mobile banking, the results indicate that a one percent increase in mobile banking revenue increases ROE by 0.0047 percent holding other factors constant. As for the internet banking revenue, the results indicate that a one percent increase in internet banking revenue increases ROE by 0.0009 percent ceteris peribus.

Hypothesis three sought to investigate the effect of mobile banking, internet banking and online banking on market share of a bank. To attain this, the random effects models were first estimated using the generalized least square methods and the robust

standard errors thus they were free from serial correlation problem. Given the large figures for the variables since the variables are on financial data we take logarithms to standardise the data.

Table 4.7 Regression analysis for model 3 with Market Share as the dependent variable and hypothesis testing results for effects of mobile banking, internet banking and online banking on market share.

	Market Share			
	Coef.	Robust Std. Err.	z - stat	P> t
Mobile Banking	0.0011	0.0005	2.49	0.013
Online banking	0.0001	0.0000	0.02	0.982
Internet banking	0.0004	0.0001	3.38	0.001

Source: Field data

Table 4.7 presents the individual hypothesis tests in attempt to find the effect of mobile banking, internet banking and online banking on bank's market share and we find that mobile banking revenue and the internet banking revenue positively significantly influence market share at 5 percent significance level. However, for online banking revenue, is positively affects the market share though not significant since its respective probability value of the t-statistic is greater than 0.05 given that its p- value is 98.2 percent. For mobile banking, the results indicate that a one percent increase in mobile banking revenue increases market share by 0.0011 percent holding other factors constant. As for the internet banking revenue, the results indicate that a one percent increase in internet banking revenue increases market share by 0.0004 with all other factors being held constant.

4.8 Discussion of Results

The findings of the study reveal that adoption of technology by banks positively affects bank's profitability, shareholder's wealth as well as the banks market share. Mobile banking and internet banking positively and significantly affects bank's profitability, shareholder's wealth and market share. However, the effect of mobile banking seems to be higher than that of internet banking. This could be attributed to the increased mobile telephony coverage among the Kenyans. In addition, mobile banking platform is easier and cheaper to use as opposed to internet banking which require internet connection for one to do the transaction. Moreover, the availability of soft loans from banks via mobile banking platform may have contributed to more uptake given its convenience to the user thus making its effect on bank's profitability, shareholders wealth and market share higher than that of internet banking.

On the effects of technology on Return on Assets (ROA), the study finds that mobile and internet banking revenue positively significantly influence ROA at 5 percent significance level. However, for online banking revenue, it positively affects the ROA though not significant since its respective probability value of the t-statistic is greater than 0.05. For mobile banking, the results indicate that a one percent increase in mobile banking revenue increases ROA by 0.005 percent holding other factors constant. As for the internet banking revenue, the results indicate that a one percent increase in internet banking revenue increases ROA by 0.001 percent *ceteris paribus*.

On the effects of technology on Return on Equity (ROE), the study finds that mobile and internet banking revenue positively significantly influence ROE at 5 percent significance level. However, for online banking revenue positively affects the ROE

though not significant since its respective probability value of the t-statistic is greater than 0.05 given that its p- value is 86.7 percent. For mobile banking, the results indicate that a one percent increase in mobile banking revenue increases ROE by 0.0047 percent holding other factors constant. As for the internet banking revenue, the results indicate that a one percent increase in internet banking revenue increases ROE by 0.0009 percent *ceteris paribus*

On the effects of technology on market share of the bank, the study reports that mobile and internet banking revenues positively and significantly influence market share at 5 percent significance level. However, for online banking revenue positively affects the market share though not significant since its respective probability value of the t-statistic is greater than 0.05 given that its p- value is 98.2 percent. For mobile banking, the results indicate that a one percent increase in mobile banking revenue increases market share by 0.0011 percent holding other factors constant. As for the internet banking revenue, the results indicate that a one percent increase in internet banking revenue increases market share by 0.0004 with all other factors being held constant.

The findings of the study resonate with the Diffusion of innovation theory by Mahajan and Peterson (1985) which eludes and elaborates on how new inventions, internet and mobile banking in particular is adopted and becomes successful Clarke (1995).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter covers summary of the findings of the study. In addition, the chapter gives the conclusion arrived at by the study, recommendations of the study, limitations of the study and suggestions for areas for further studies.

5.2 Summary of Findings

The study sought to investigate technology as a strategic approach to improve performance in banking industry with reference to branchless banking models in Kenya. More specifically, the study sought to first, investigate the effect of mobile banking, internet banking and online banking on banks profitability in Kenya. Secondly, the study sought to investigate the effect of mobile banking, internet banking and online banking on banks' Return on Equity (ROE) in Kenya. Thirdly, the study sought to determine the effect of mobile banking, internet banking and online banking on banks market share in Kenya

On the banks performance, the findings of the study were that both the mobile banking revenue and the internet banking revenue positively significantly influence ROA at 5 percent significance level. However, for online banking revenue, the effects on ROA was positive though insignificant since its respective probability value of the t-statistic is greater than 0.05.

On the shareholder's wealth, the findings were similar to those of the bank's profitability. Mobile banking and the internet banking were found to positively significantly influence ROE at 5 percent significance level. However, for online banking revenue, the effects on ROE was positive though insignificant since its respective probability value of the t-statistic is greater than 0.05.

Similar results were evidenced with regard to market share where mobile banking revenue and the internet banking were found to positively significantly influence bank's market share at 5 percent significance level with online banking having positive but insignificant effect.

5.3 Conclusion of the Study

In conclusion, based on the summary of the findings of the study its evidently clear that mobile banking platform and internet banking platform positively and significantly influences banks profitability, shareholder's wealth and bank's market share. As such, the bank management can leverage on these two branchless banking models to increase banks profitability, shareholder's wealth and bank's market share thus remain competitive.

The implication here is that for every shilling invested in mobile banking and internet banking the return is positive and significant and as such banks can leverage on this by scaling up the investment in these two branchless banking models. However, investment in online banking seem to also positively influence profitability, shareholder's wealth and markets share though not significantly. As such banks, should way options when investing in online banking since this may not necessarily

translate to good returns as it would be if they invested in mobile banking and Internet banking platforms.

In order to improve efficiency in bank operations, Kenyan commercial banks should therefore strive to shift from traditional banking towards modern banking in their attempt to increase their market share by targeting the low income and rural households. This will help them in widening their customer base by adopting alternative delivery channels such as mobile and internet banking platforms. In addition, adoption of e-banking facilities by banks is likely to enhance delivery channels to customers hence fostering accessibility and affordable of financial services to the unbanked population.

5.4 Recommendations of the Study

Based on the study findings, banks stand to gain more in terms of profitability, maximization of shareholder's wealth and increasing market share by adopting mobile banking and internet banking as opposed to online banking. However, much preference should be given to mobile banking compared to internet banking. This is because the magnitude of the effect of mobile banking on profitability, shareholder's wealth and market share is higher than the respective magnitude of the internet banking.

5.5 Limitations of the Study

The study sought to investigate technology as a strategic approach to improve performance in banking industry with reference to branchless banking models in

Kenya for 2010 – 2015 period. The assumption was that all the commercial banks adopt technology as a strategic approach in their operations. This study therefore had two limitation. First, the study only used mobile banking, internet banking and online banking as the only branchless banking model. This study did not go to extent of looking at the Point of Sale (POS) which actively uses credit cards and debit cards for transactions. Secondly, only 23 commercial banks were found to offer either mobile banking, internet banking and online banking or all the three out of the 42 commercial banks as at end of 2015.

5.6 Areas suggested for Further Research

From this study, the areas for further study that would be suggested given the findings of this study is on how the number of mobile banking, online banking and internet banking transaction as well as the cost of investing in this three branchless banking affect profitability, shareholders wealth and market share. This study only looked at the revenues from the three models.

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Appendices

Appendix 1: Letter of Introduction



UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS

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P.O. Box 30197
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DATE 19/09/2016

TO WHOM IT MAY CONCERN

The bearer of this letter SALAT ABDULLAH MOHAMED

Registration No. DE1/73723/2009

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

PATRICK NYABUTO
SENIOR ADMINISTRATIVE ASSISTANT
SCHOOL OF BUSINESS

Appendix 2: Questionnaire

SECTION A: BACKGROUND INFORMATION OF THE RESPONDENTS

1. What is your total experience in the banking industry (please tick inside the relevant brackets).

1 year [] 2 - 5 years [] 5 - 10 years [] Over 10 years []

2. How long have you worked with your current bank?

1 year [] 2 - 5 years [] 5 - 10 years [] Over 10 years []

3. Kindly indicate your job designation.

Finance manager [] Business manager [] IT manager [] Others please specify []

SECTION B: TECHNOLOGY AND BANK PERFORMANCE

4. To what extent does this bank make use of the following technological branchless banking in its operations? Use a scale of **1** to **5** where 1 is to a very great extent and 5 is to no extent.

Mobile banking technologies []

Internet banking Services []

Online banking Services []

Other (specify)

5. Would you agree that the adoption of ICT is very important in the improvement of capital adequacy of commercial banks?

Strongly Agree []

Agree []

Neither Agree nor Disagree []

Disagree []

Strongly Disagree []

Please give reasons for your answer

6. How would you rate the importance of technology based branchless banking in the improvement of the organization's profitability?

Very high []

High []

Moderate []

Low []

Negligible []

Please explain

7. To what extent has technology based branchless banking improved the market share of the bank?

Very great extent []

Great extent []

Moderate extent []

Low Extent []

No extent []

Please explain....

8. Would you agree that the adoption of technology-based branchless banking has led to an improvement in the liquidity of commercial banks?

- Strongly Agree []
- Agree []
- Neither Agree nor Disagree []
- Disagree []
- Strongly Disagree []

Please give reasons for your answer

9. Would you agree that the adoption of technology-based branchless banking had contributed to the improvement of asset quality of commercial banks?

- Strongly Agree []
- Agree []
- Neither Agree nor Disagree []
- Disagree []
- Strongly Disagree []

Please give reasons for your answer

10. Would you agree that the adoption of technology-based branchless banking is very important in the improvement of earnings of commercial banks?

- Strongly Agree []
- Agree []
- Neither Agree nor Disagree []
- Disagree []
- Strongly Disagree []

Please give reasons for your answer

11. Do you agree that commercial banks are adopting ICT to improve their operations?

- Strongly Agree []
- Agree []
- Neither Agree nor Disagree []
- Disagree []
- Strongly Disagree []

Please give reasons for your answer

Appendix 3: List of Licensed Commercial Banks

1. African Banking Corporation Limited
2. Bank of Africa Kenya Limited
3. Bank of Baroda (K) Limited
4. Bank of India
5. Barclays Bank of Kenya Limited
6. CfC Stanbic Bank Limited
7. Charterhouse Bank Limited - UNDER – STATUTORY MANAGEMENT
8. Chase Bank (K) Limited - IN RECEIVERSHIP
9. Citibank N.A Kenya
10. Commercial Bank of Africa Limited
11. Consolidated Bank of Kenya Limited
12. Co-operative Bank of Kenya Limited
13. Credit Bank Limited
14. Development Bank of Kenya Limited
15. Diamond Trust Bank Kenya Limited
16. Ecobank Kenya Limited
17. Spire Bank Ltd
18. Equity Bank Kenya Limited
19. Family Bank Limited
20. Fidelity Commercial Bank Limited
21. First Community Bank Limited
22. Guaranty Trust Bank (K) Ltd
23. Giro Commercial Bank Limited
24. Guardian Bank Limited
25. Gulf African Bank Limited
26. Habib Bank A.G Zurich
27. Habib Bank Limited
28. Imperial Bank Limited - IN RECEIVERSHIP
29. I & M Bank Limited
30. Jamii Bora Bank Limited

31. KCB Bank Kenya Limited
32. Middle East Bank (K) Limited
33. National Bank of Kenya Limited
34. NIC Bank Limited
35. M-Oriental Bank Limited
36. Paramount Bank Limited
37. Prime Bank Limited
38. Sidian Bank Limited
39. Standard Chartered Bank Kenya Limited
40. Trans-National Bank Limited
41. UBA Kenya Bank Limited
42. Victoria Commercial Bank Limited

Source: (CBK, 2016)