THE IMPACT OF MOBILE BANKING ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university for academic credit.

Signed: …… **Date:** ……

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This project report has been submitted for examination with my approval as the appointed supervisor.

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DEDICATION

This research project is dedicated to my beloved wife Grace Waithira who offered unconditional sacrifice and support during the course of the entire MBA programme. Special dedication to my daughter Amy Gwen Kazira, who always remained my source inspiration and desire to excel academically.

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ABSTRACT

This study sought to determine the impact of mobile banking on the Financial Performance of Commercial Banks in Kenya during a period of five years. Banks, aided by technological developments, have responded to the challenges by adopting a new strategy, which emphasizes on attempting to build customer satisfaction through offering better products and services and at the same time to minimize operation costs. The need/wish for mobility seems to be the driving force behind mobile commerce in general hence the provision of mobile banking services has been broadly used.

The study adopted a causal research design. It studied the 43 Commercial Banks in Kenya for a period of five years between 2008 through 2012, data secondary in nature, was drawn from the published financial reports of commercial banks and the Central Bank of Kenya reports. Analysis involved multiple regressions of variables under study that is the financial performance represented by return on assets, the investment in mobile banking measured in Kenya shillings, the number of registered mobile banking customers by the banks and the number of mobile banking transactions by the banks.

From the regression model of 5 years the study found evidence of positive relationship between mobile banking and bank performance. The study results show that Mobile Banking has a moderate influence on profitability of commercial banks in Kenya. Thus, there exists positive relationship between mobile banking and bank performance. Based on the summary of the major findings of the study it can be concluded that mobile banking offers banks several opportunities for increasing revenues. From the investment in mobile banking measured and the number of mobile banking transactions by the banks have a positive relation to the return on asset (ROA) in that a unit increase in each / or all would result in an increase in the performance indicator ROA.

The study recommends that commercial banks should therefore continue to adopt new technologies which will improve their margins and hence their profitability. Government policy makers should also review policies related to promotion of innovation and transfer of technology that will improve profitability of organizations because it will convert to better tax revenues for the government.

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LIST OF ABBREVIATIONS

ATM - Automated Teller Machine

CBK -Central Bank of Kenya

EFT - Electronic Funds Transfer

ICT -Information Communication Technology

IT -Information Technology

IVR -Interactive Voice Response

KCB -Kenya Commercial Bank

MFI - Micro-Finance Institutions

PC - Personal Computer

PDA -Personal Digital Assistant

PIN - Personal Identification Number

POS - Point Of Sale Terminal

RMP -Relative Market Power

ROA -Return on Asset

ROEC -Return on Economic Capital

SCP - Structure Conduct Performance

SMS - Short Messaging Service

SPSS -Statistical Package for Social Sciences

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Mobile technology is revolutionizing the global banking and payment industry. It offers new opportunities for banks to provide added convenience to their existing customers in both developed and developing countries in order to reach a large population of unbanked customers in emerging markets, banks have radically shifted from traditional banking to branchless mode of banking. Adoption of latest technology has enabled banks to extend their customer base, where mobile banking has proved to be the chief advancement. Mobile banking can be categorized as the latest advancement in electronic banking, which has widened customers' access to bank accounts through wireless channels. Mobile banking is a financial service where the bank customers perform balance inquiry, credit transfer, and other businesses according to instruction sent through the mobile phone. From customers' perspective adopting mobile banking services benefit in terms of convenience to perform banking transactions anytime and anywhere.

The mobile revolution has transformed the lives of many Africans, providing not just communications but also basic financial access in the form of phone-based money transfer and storage (Jonathan & Camilo, 2008; Demombynes & Thegeya, 2012). The high growth and penetration rates of mobile telephony that is transforming cell phones into pocket-banks in Africa is providing opportunities for countries on the continent to increase affordable and cost effective means of bringing on board a large chunk of the population that hitherto has been excluded from formal financial services for decades hence increasing their profitability . Such a transformation is of interest not only to banks and Micro Financial Institutions (MFIs) but also to governments, financial regulators as well as development partners who are providing support to improve the livelihoods and achieve sustained economic growth.

Mobile banking refers to provision of banking and bank related financial services with the help of mobile telecommunication devices. The scope of services may include facilities to conduct bank and stock market transactions to administer their accounts and access customized information. Internet banking helped give the customers anytime access to their banks, customers could check out their account details, get

their bank statements, perform transactions like transferring money to other accounts and pay their bills sitting in their homes and offices (Porteous, 2006).

However the biggest limitation of internet banking is the requirement of a personal computer (PC) with an internet connection, not a big obstacle if we look at the United States and the European countries, but definitely a big barrier if we consider most of the developing countries of Africa like Kenya. Mobile banking addresses this fundamental limitation of internet banking, as it reduces the customer requirement to just a mobile phone (Owens, 2009)

Mobile banking is emerging as a key electronic channel for the global banking and financial service industry. The ubiquitous nature of mobile devices and services and the ability of mobile banking services to reduce overall operational costs, streamline operations and expand customer base are expected to boost prospects in the industry. Increasing adoption of mobile phones among the younger generation (18-34 years age group) and rapid rise in demand for mobile payments are expected to fuel demand for mobile banking services. The industry is also expected to benefit from favourable government and regulatory specifications, which are aimed at providing banking services to unbanked customers to promote economic development.

Banks offering mobile access are mostly supporting some or all of the following services: Account Balance Enquiry, Account Statement Enquiries, Cheque Status Enquiry, Cheque Book Requests, Funds Transfer between Accounts, Credit/Debit alerts, Minimum Balance Alerts, Bill Payment Alerts, Bill Payment, Recent Transaction History Requests and Information Requests like Interest Rates/ Exchange Rates (Porteous, 2006).

1.1.1 Mobile Banking

The term mobile "refers to applications, which are designed for users on the move". Mobile device is commonly known as cell phone and users commonly use it for communication and as a wireless delivery channel. Mobile banking is also known as M-Banking or m-banking. M-banking is defined as "a form of banking transaction carried out via a mobile phone". Moreover, it is defined as a "type of execution of financial services in the course of which - within an electronic procedure- the customer uses mobile communication techniques in conjunction with mobile

devices". The technologies generally used for mobile banking are Interactive Voice Response (IVR), Standalone Mobile Application Clients, Short Messaging Service (SMS) and Wireless Application Protocol (WAP)

The introduction of mobile banking has revolutionized and redefined the ways banks were operating hence technology is now considered as the main contribution for the organizations' success and as their core competences. Mobile Banking refers to provision and availment of banking and financial services with the help of mobile telecommunication devices that allow customers of a financial institution to conduct a number of financial transactions through a mobile device such as a mobile phone or personal digital assistant. The scope of services offered may include facilities to conduct bank and stock market transactions, to administer accounts and to access customized information.

Mobile banking is one innovation which has progressively rendered itself in pervasive ways cutting across numerous sectors of economy and industry. An appropriate banking environment is considered a key pillar as well as an enabler of economic growth (Koivu 2002). With the continuously emerging wave of information driven economy, the banking industry in Kenya has inevitably found itself unable to resist technological indulgence.

The terms Mobile Phone banking and mobile banking (M-banking) are used interchangeably. The term M-Banking is used to denote the access to banking services and facilities offered by financial institutions such as account-based savings, payment transactions and other products by use of an electronic mobile device. Mobile banking has yielded a multiple effect on the number of solutions available to clients. This is in addition to more efficient transactional environment and the high substitution of banking points.

1.1.2 Financial Performance

The use of m-banking can contribute to improved bank performance, in terms of increased market share, customer satisfaction, expanded product range, customized products and better response to client demand. M-banking continues to be used as a strategic tool which influence banks income structure since Successful strategy in terms of customer retention or enhancement ultimately leads to the profitability. For

financial institutions, mobile banking and mobile money can help increase banking penetration, develop customer loyalty, reduce operational costs, meet government service obligations, etc. (GSMA, 2008a, Wishart 2006).

An organization's ability to perform financially is critical to its survival in the short and in the long run. Some researchers use earnings quality, which is a concept that is context-based and hence does not have a single definition. Earnings quality can be viewed from a number of perspectives. Schipper and Vincent, (2003) assess earnings quality from two perspectives. One perspective is decision usefulness, where "because of its context specificity, assessments of earnings quality from the perspective of decision usefulness inevitably confront a myriad of users and uses…" The second perspective of earnings quality used by Schipper and Vincent, (2003) is using the Hicksian concept of income (Hicks, 1939), which the authors recognise is not capable of empirical observation.

1.1.3 Relationship between Mobile banking and Financial Performance

Mobile banking offers banks several opportunities for increasing revenues. These include monetizing the value of customer analytics, delivering greater real-time access to products and services, and conducting targeted marketing campaigns based upon the knowledge of consumer preferences that banks collect. Past investigations on branchless banking have acknowledged the important role that mobile phones play in some models (Ivatury & Mas 2008, Lyman, et. Al 2008). They are consistent with the promise seen in electronic money bringing improved efficiencies and reducing transaction costs. Theoretically Mobile banking is expected to have a positive effect on financial performance, as mobile banking services results in more profits for the banks through commission incomes as well as gradual reduction in overhead expenses (particularly staff and marketing).

In Kenya, Ndung'u (2011) concurs that mobile banking has revolutionalised the money transfer business and has created further innovations that have lowered the transaction costs for both the banks and customers. This transformation of money

transfer business has translated to more incomes and profits to the banks. This confirms why Kenya has appeared in the global map in the front of mobile money transfer services. Due to the potential in mobile banking, the model has been replicated in other countries and seems to be a threat to the traditional money transfers services like the EFT and cheque system. Many retail transactions in Kenya have moved to the mobile phone. Bank customers can move money from their bank accounts to their e-money accounts or from their e-money to their bank accounts. This improvement of the mobile money services has increase the velocity and circulation of money in the country and has resulted to more profits for the banks through commission incomes.

Financial institutions which have had difficulty providing profitable services through traditional channels to poor clients see Mobile banking /Mobile payments as a form of branchless banking which lowers the cost of serving low income customers (Ivatury & Mas, 2008). Today Mobile banking is viewed as the 'fifth channel' of banking such that it has become a channel of its own and not an appendage of online banking hence a greater integration with back end core banking systems. As a result many unbanked population have been brought on board to main banking stream thereby enabling banks tap on the resources much needed to grow their revenue base as well as their customer base as occasioned in the recent launch of M-shwari partnership between Commercial Bank of Africa with Safaricom which has improved financial performance.

1.1.4 Commercial Banks in Kenya

Commercial banks are financial intermediaries who are the main providers of credit to the household and corporate sector and operate the payments mechanism. Commercial banks are typically joint stock companies and may be either publicly listed on the stock exchange or privately owned. Commercial banks play a vital role in the economic resource allocation of countries; they channel funds from depositors to investors continuously. They can do so, if they generate necessary income to cover their operational cost they incur in the due course.

In Kenya the Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK), governs the Banking. According to the Central Bank of Kenya, there are 43 licensed commercial banks in Kenya. Three of the banks are public financial institutions with majority shareholding being the Government and state corporations, the rest are private financial institutions. Of the private banks, 27 are local commercial banks while 13 are foreign commercial banks. Commercial banks in Kenya play a major role in Kenya. They contribute to economic growth of the country by making funds available for investors to borrow as well as financial deepening in the country. Commercial banks therefore have a key role in the financial sector and to the whole economy.

Bhattacharya and Thakor (1993) contemporary banking theory suggest that banks, together with other financial intermediaries, are essential in the allocation of capital in the economy. A very powerful tool to explain how banks work is provided by the literature on financial intermediation. This literature is centred on information asymmetries, an assumption that "different economic agents possess different pieces of information on relevant economic variables, and that agents will use this information for their own profit" (Freixas and Rochet, 1998). The presence of asymmetric information leads to adverse selection and moral hazard problems. Adverse selection is an asymmetric information problem that takes place before the transaction occurs on it is related to the lack of information about the lenders' characteristics. Moral hazard takes place after the transaction occurs. It is related with incentives by the lenders to behave opportunistically.

1.2 Research Problem

Mobile banking is expected to increase the profitability of commercial banks, as mobile banking services are geared towards increasing the velocity and circulation of money in the economy and hence more profits for the banks through commission incomes as well as gradual reduction in overhead expenses (particularly, staff, marketing and IT) which translates to an improvement in banks´ profitability. Mobile banking and the need to lower transaction costs are major driving factors for the mobile banking technology's adoption.

The Kenyan banking sector has witnessed many changes since the beginning of Mobile banking. Today, customers of banks have efficient, fast and convenient banking services. In line with rendering qualities and acceptable services, most banks in Kenya are investing large sums of money in information and communication Technology. While the rapid development of information technology has made some banking tasks more efficient and cheaper, technological investments are taking a larger share of bank's resources.

Currently, apart from personnel costs, mobile technology is usually the biggest item in the budget of commercial banks, and the fastest growing one. The increase in operating costs for Kenya Commercial Bank is attributed the increase in operating costs mainly investment in information technology and network infrastructure notably for the KCB Mobi Bank (Oduor-Otieno 2012). During investor briefing Mwangi (2012) asserts that the Equity Bank had made large investments in ICT in order to enhance their mobile banking services solutions. It is therefore important that Mobile banking innovations are made by sound analysis of risks and costs associated so that to avoid harms on the bank performance.

Fast advances in the wireless technology and the intensive penetration of cell phones have motivated banks to spend large budget on building mobile banking systems hence driving the operational costs of many commercial banks in Kenya, for sustainable intermediation function, banks need to be profitable. The question arises as to whether investment in mobile banking technology increases or reduces financial performance of Commercial banks.

1.3 Research Objective

The purpose of the study was to establish the effect of mobile banking on the financial performance of Commercial Banks in Kenya.

1.4 Value of the Study

i) The study aimed at assessing what incidence mobile banking has had on financial performance and financial development of commercial banks. Findings have had substantial policy relevance; especially on which financial sectors are benefiting most owing to the soaring phenomenon of mobile banking. The seminal character of this work had added to the literature by proposing some hitherto unexplored dimensions of financial development which will provide the much needed guidance to policy makers on the financial development empirics of mobile banking.

ii) The study analyzed the various mobile banking products/services distributional channels and their impact on productivity of banks hence the findings of the study provide financial services industry with a better understanding of customer perception of mobile banking services.

iii) To academicians and researchers the study is of great importance as it provides relevant measures that could guide future search as well as the base from which more research studies can be done.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the literature on bank performance and mobile banking. The empirical evidence on the mobile banking is outlined.

2.2 Theoretical Review

Studies on the performance of banks started in the early 1980s with the application of two industrial organizations models: the market power and Efficiency structure theories (Anthanasoglou et al. 2006). The balanced portfolio theory has also added greater insights into the study of bank profitability (Nzongang & Atemnkeng 2006)

2.2.1 Contemporay Banking Theory

Bhattacharya and Thakor (1993) contemporary banking theory suggest that banks, together with other financial intermediaries, are essential in the allocation of capital in the economy. A very powerful tool to explain how banks work is provided by the literature on financial intermediation. This literature is centred on information asymmetries, an assumption that "different economic agents possess different pieces of information on relevant economic variables, and that agents will use this information for their own profit" (Freixas and Rochet, 1998). The presence of asymmetric information leads to adverse selection and moral hazard problems. Adverse selection is an asymmetric information problem that takes place before the transaction occurs it is related to the lack of information about the lenders' characteristics. Moral hazard takes place after the transaction occurs. It is related with incentives by the lenders to behave opportunistically.

2.2.2 The market Power Theories

As noted in Tregena (2009) applied in banking the market power hypothesis posits that the performance of banks is influenced by the market structure of the industry. There are two distinct approaches within the market power theory; the Structure Conduct Performance (SCP) and Relative Market Power (RMP) hypothesis.

According to the SCP approach, the level of concentration in the banking market gives rise to potential market power by banks, which may raise their profitability.

Banks in more concentrated markets are most likely to make 'abnormal profits' by their ability to lower their deposits rates and charge higher loan rates as a result of collusive or monopolistic reasons, than firms operating in less concentrated markets irrespective of their efficiency (Tregenna 2009). Unlike the SCP, the RMP hypothesis posits that bank profitability is influenced by market share. It assumes that only large banks with differentiated products can influence prices and increase profits.

With the advent of technology and increasing use of smart phone and tablet based devices, the use of Mobile Banking functionality would enable customer connect across entire customer life cycle much comprehensively than before. The current mobile banking objectives of say building relationships, reducing cost, achieving new revenue stream will transform to enable new objectives targeting higher level goals such as building brand of the banking organization. Emerging technology and functionalities would enable to create new ways of lead generation, prospecting as well as developing deep customer relationship and mobile banking world would achieve superior customer experience with bi-directional communications. Among digital channels, mobile banking is a clear IT investment priority in 2013 as retail banks attempt to capitalise on increasing their market share by attracting deposits from the unbanked (Tiwari, 2006).

2.2.3 The Efficiency Theory

The efficiency hypothesis, on the other hand posits that banks earn high profits because they are more efficient than others. There are also two distinct approaches within the efficiency; the X-efficiency and Scale-efficiency hypothesis. According to the X-efficiency approach more efficient firms are more profitable because of their lower costs. Such firms tend to gain large market shares which may manifest in higher levels on market concentration, but without any causal relationship from concentration to profitability (Anthanasoglou et. al.2006). The scale approach emphasizes economies of scale rather than differences in management or production technology. Large firms can obtain lower unit cost and higher profits through

economies of scale. This enables large firms to acquire market share which may manifest in higher concentration and then profitability (Anthanasoglou et al.2006)

Banks can realize operational efficiencies by adopting an integrated channel strategy that includes mobile banking. The cost of processing a transaction via mobile phone can be as much as 10 times lower than via an ATM and as much as 50 times lower than via a branch. As banks develop their strategies for giving customers access to their accounts through cell phones and other mobile devices, they also regard this emerging platform as a potential catalyst for generating operational efficiencies and as a vehicle for new revenue sources. For financial institutions, mobile banking and mobile money can help increase banking penetration, develop customer loyalty, reduce operational costs, meet government service obligations, etc. (GSMA, 2008a, Wishart 2006). Most banks believe that the mobile channel will help them reduce transaction costs as well as increase customer engagement and retention thereby improving their financial performance.

2.3 Empirical Literature

Nader (2011) in his study on the profit efficiency of the Saudi Arabia Commercial banks sampled 6 Saudi commercial banks, out of 11 ones working in the Saudi banking market. Data collected covered the period 1998 to 2007 for each bank; the study indicated that availability of mobile banking had a positive effect on profit efficiency of Saudi banks. The results showed that the most important determinants of "profit efficiency" are the "availability of phone banking" and the "number of ATMs". Thus, this result was consistent with his idea that availability of mobile banking" is what determines profit efficiency rather than any other determinant in the study.

Uppal R.K. (2010) studies the extent of mobile banking in Indian banking industry during the years 2000-2007. The study concludes that among all e-channels, ATM is the most effective while mobile banking does not hold a strong position in public and old private sector but in new private sector banks and foreign banks m-banking is good enough with nearly 50 pc average branches providing m-banking services. M-banking customers are also the highest in e-banks which have positive impact on net profits and business per employee of these banks. Among all, foreign banks are on the

top position followed by new private sector banks in providing m-banking services and their efficiency is also much higher as compared to other groups.

Gakure (2013) from their study it is seen that bank innovations have a moderate influence on profitability of commercial banks in Kenya. The analysis produced a coefficient of determination of 47.8% which shows the percentage of variations in profitability which is explained by bank innovations. The significance test showed that influence of bank innovations on bank profitability was statistically significant. This means that the combined effect of the bank innovations in this research is statistically significant in explaining the profits of commercial banks in Kenya. Banks in Kenya have achieved more than a decade of boosting their earning capability and controlling costs through adoption of innovations like the mobile banking, internet banking and recently the agency banking. Responses presented on the influence of mobile banking on the profitability of commercial banks in Kenya are proved that incomes from mobile banking have high margin and that maintenance costs of mobile banking are low.

Maina (2012) from her study on the contribution of mobile banking to financial performance of commercial banks in Kenya investigated the relativity between mobile banking and financial performance. The study also sought to find the financial strategies that had been adopted by the institutions to enhance growth and efficiency of mobile banking .From the findings of the study 70% of financial institutions in Kenya had adopted process innovation (mobile banking) which enabled them to serve more clients within a shorter time hence boosting the financial performance over time. She concludes that adoption of mobile banking by financial institutions is very important in improvement of financial adequacy of commercial banks as well as improving operations and reduce costs in the long run hence increase in earnings.

2.4 Mobile Banking

Mobile banking has increasingly been employed by many banks around the world to generate additional revenue, reduce costs or to increase customer satisfaction, often with very promising results. Unlike in the past where banks offering mobile services suffered a severe setback due to lack of customer interest and unripe technologies the time seems to be now for re-launching mobile services. Mobile banking is usually

defined as carrying out banking services with the help of mobile phones or PDAs. The offered services may include transaction facilities as well as other related services that cater primarily for informational needs revolving around financial activities (Tiwari, 2006).

Mobile banking started with the creation of services by banks which could be accessed through the mobile phone. These facilities aimed at enabling customers access information relating to their accounts. Subsequent innovations have seen the mobile banking phenomena continue to grow steadily. Mobile banking takes several dimensions of execution all representing a new distribution channel that allows financial institutions and other commercial actors to offer financial services outside traditional bank premises.

The need for convenient ways of accessing financial resources beyond the conventional norms has seen the recurrent expansion and modernization of banking patterns. And given the huge demand for finance oriented services, institutions beside the historical banks have joined the fray in an attempt to grab a piece of the perceived cake of opportunity within the banking industry. The pent up demand for an affordable and reliable way of holding funds while ensuring that risk levels are consigned to a minimum is consistently unfolding. A system with the potential to obliterate the historical hurdles of cost and free access which have for a long time stood in the way of willing partakers of banking services evokes immediate attention and interest. The unprecedented uptake of mobile phone banking services in Kenya is a testament to this fact (Wambari, 2009).

Porteous (2006) distinguishes two aspects of mobile banking: Additive and transformational characteristics. Additive aspects are those in which the mobile phone is merely another channel to an existing bank account. Mobile banking is additive when it merely adds to the range of choices or enhances the convenience of existing customers of mainstream financial institutions. Transformational characteristics arise when the financial product linked to the use of the phone is targeted at persons who do not hold formal bank accounts with the conventional banking institutions.

It is therefore imperative to understand the business environment in which banks operate and identify customer groups that the banks may seek to target via Mobile

banking. For instance many people do not own bank accounts but own mobile phones and this unbanked population posses/ controls huge chunk of money running into billions of shillings which is not banked as witnessed in M-pesa transactions which runs into billions since is advent (Asongu, 2012). As a result this clientele have been brought on board to main banking stream thereby enabling banks tap on the resources much needed to grow their revenue base as well as their customer base as occasioned in the recent launch of M-shwari partnership between Commercial Bank of Africa with Safaricom which is going to reach many unbanked population.

Mobile banking enhances the number of existing channels of distribution that a bank employs to offer its services. The effect of a distribution channel can be measured by its fulfilment of three objectives which are closely related to each other. These are increasing sales volume, reducing costs of distribution and increasing customer satisfaction. One of the primary tasks of a distribution channel is to increase the volume of demand for products at profitable prices. This object is arrived by increasing operations efficiency so that those losses /costs are minimised that are caused by delays in catering to customer orders. Further a favourable reputation of the firm's logistical capacity may help generate additional orders. Mobile banking contributes to achieving this goal by following means: anytime anywhere access to banking services; availability of push services to suggest transaction on an urgent basis.

According to Jonathan & Camilo (2009), most mobile transactions in the developing world enable users to do three things: Store value (currency) in an account accessible via a handset. When the user already has a bank account, this is generally a question of linking to a bank account. If the user does not have an account, then the process creates a bank account for him/her or creates a pseudo bank account, held by a third party or the user's mobile operator; Convert cash into and out of the store value account. When the account is linked to a bank account, then users can visit banks to cash-in and cash-out. In many instances, users can also visit the GSM providers' retail stores.

According to Demombynes & Thegeya (2012), on the one hand a partially integrated product clearly delineates the role of the bank (which provides and owns banking services) from that of the mobile service provider (which provides mobile telephony

infrastructure and controls the agent network). Thus the bank compensates the mobile service provider for access to the network and enjoys the remaining profits. This type of contract more closely looks like a debt contract between parties.

On the other hand, a fully integrated solution may not draw the same distinction between bank and mobile service providers. In this case, the distribution of surplus is contingent on the relative bargaining power of the bank and mobile service provider. This sort of contract more closely resembles an equity contract between two parties. Equity-like contracts are more likely to be complex and therefore more difficult to negotiate than debt-like contracts, there-by presenting a potential hurdle towards the goal of increasing access.

The internet and the Mobile phone-two technological advancements that have profoundly affected human behaviour in the last decade- have started to converge. The products of this association are mobile data services. Using a variety of platforms, services are being created to enable mobile devices to perform many activities of the traditional internet albeit in a reduced format for mobile devices. One area of activity is mobile banking –one of the first areas of commercial transaction on the wireless internet. Banking is an area that has extended in many different ways in recent years, including telephone and online banking. Mobile banking provides yet another channel for banking services in emerging market, provides some possibility for becoming a primary channel.

The spread of mobile phones across the developing world is one of the most remarkable technology strives of the past decade. Buoyed by prepay cards and inexpensive handsets, hundreds of millions of first time telephone owners have made voice calls and text messages part of their daily lives. However many of these new mobile phone users live in informal and or cash economies, without access to financial services that others take for granted. Indeed across the developing world there are probably more people with mobile handsets than with bank accounts (Porteous, 2006). Various initiatives use mobile phones to provide financial services to the unbanked. These services take a variety of forms including long distance remittances, micropayments and informal airtime bartering schemes –all go by various names including mobile banking, mobile transfers and mobile payments.

The terms M-banking, M-payments, M-transfer and M-finance refer collectively to a set of applications that enable people to use their mobile telephones to manipulate their bank accounts, store value in an account linked to their handsets, transfer funds or even access credit or insurance products. The first target for these applications was consumers in the developed world. By complementing services offered by the banking system, such as cheque books, ATMs, Voice mail/landline interfaces, smart cards, point of sale networks and internet resources, the mobile platform offers a convenient additional method for managing money without handling cash (Karjaluoto, 2002). For users in the developing world the appeal of these Mobile banking / M-payments systems may be less about convenience and more about accessibility and affordability.

2.5 Financial Performance

An organization's ability to perform financially is critical to its survival in the short and in the long run. Tobin's Q is widely used as a proxy for firm performance (Gompers, Ishii and Metrick, 2003). Other researchers use earnings quality, which is a concept that is context-based and hence does not have a single definition. Earnings quality can be viewed from a number of perspectives. Schipper and Vincent, (2003) assess earnings quality from two perspectives. One perspective is decision usefulness, where "because of its context specificity, assessments of earnings quality from the perspective of decision usefulness inevitably confront a myriad of users and use"

Despite the potential benefits of ICT and mobile commerce, there is debate about whether and how their adoption improves bank performance. Use of and investment in ICT requires complementary investments in skills, organization and innovation and investment and change entails risks and costs as well as bringing potential benefits. There are positive impacts of mobile banking on bank turnover and profitability and to a lesser extent on employment, most notably when mobile commerce is part of larger business strategies of bank. The use of mobile banking can contribute to improved bank performance, in terms of increased market share, expanded product range, customized products and better response to client demand.

Mobile banking continues to influence banks activities and their income structure. Among the activities that may be subject to stronger pressures for change are those that, up to today, have remained relatively insulated from ICT developments. This applies mainly to some retail banking activities that are suitable for standardization, and also to developments in remote banking.

2.6 Summary of Literature

Mobile technology is transforming the global banking and payment industry by providing added convenience to existing bank customers in developed markets, and by offering new services to the unbanked customers in emerging markets. This has the potential to unlock a large untapped market. This opportunity has attracted several new players ranging from multinational and start-ups to companies from adjacent industries such as retail, each trying its own business model to succeed in this new world. The influx of so many players and different services has created confusion for customers, lack of coordination among players, and limited scale for any single company.

The winners in the mobile banking and payment industry are likely to be those who have a deep understanding of local markets, its customers and regulations, who are willing to innovate and commit significant resources to the new initiatives, and who are unafraid to forge partnerships with new players. Increasing complexity of technology reduces the adoption of technology and makes it costly for the firm to implement. Higher technological innovation with reduced complexity is profitable for adoption of mobile banking as well as it increases the trust of customers on the service provider thus increasing customer satisfaction. Comparatively traditional banking system incorporated tedious authentication and verification methods which required the customer to visit the bank personally. This activity consumed time of the customer as well as the service provider, increasing the cost and complexity and reducing profit.

Most banks believe that the mobile channel will help them reduce transaction costs as well as increase customer engagement and retention. More importantly, banks will be myopic if they view mobile as just another channel for doing business. Mobile technology is changing the ecosystem of the banking industry as new players with

innovative solutions enter this market Governments see mobile technology as a vehicle to achieve financial inclusion, especially among the rural and poor population of their countries; and for-profit firms view this as an opportunity to grow and reach new customers. New services typically involve using a mobile phone and its SIM card to store money, make person to person transfers to friends and family, and mobile payments to small merchants.

Technology innovation has reduced the requirement of staff at the branch, thus reducing the salaries given to them. The office setup required and other utilities are removed, thus saving firms investment, which is now used to establish computer infrastructure that operates automatically under the supervision of few skilled IT professionals, saving time and money. Functional aspect of service provision to customers, in banking sector, is targeted to increases their interest and attract new customers. But to retain customers, the functionality offered must be reliable and timely. The value of customer relationship management has become apparent in this competitive era of technological innovation. Successful strategy in terms of customer retention or enhancement ultimately leads to the profitability.

A stream of research has argued that in banking sector, the strategic focus of banks is to remain competitive in order to retain as many customers as possible. They further added that retention of existing customers is more economical compared to acquiring the new ones as it is argued that "long-term customers take little time of the company and are less sensitive to price changes"

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes how the study was be conducted, expounding on steps and procedures involved in Research Design, Study Population and sample, Sampling Method, Data Collection, Analysis. This chapter as well expounds on the data size, the data collection methods, the instruments involved at each stage.

3.2 Research Design

This section gives the blueprint for this study, highlighting on which questions studied, which data were relevant, what data were collected, and how the results were analyzed. Research Design is a logical and systematic plan for directing a research study. It specifies the objectives of the study, the methodology and techniques to be adopted for achieving the objective(s) (Mugenda and Mugenda, 2003). This was causal study, as it was conducted to identify cause-and-effect relationships among variables when the research problem has already been narrowly defined. A casual study involves an investigation of what causes the other among different variables (Chandran, 2004). Causality approach to this study was most preferred because the study investigated whether investment in mobile-banking by banks causes increase or decrease in banking profits. This study adopted both descriptive and explanatory research design. First, the study describes the trend of bank performance, adoption, use and investment of mobile in banking sector. Second, the explanatory approach was used in investigating existing relationship between bank performance and mobile banking, and carefully tests causal research objective of the study.

3.3 Population and Sample

Cooper and Emory (1995) define population as the total collection of elements about which the researcher wishes to make some inferences. Element is the subject on which the measurement is being taken and is the unit of study, according to Cooper and Emory (1995). The population of interest in this study consisted of 25 commercial banks operating in Kenya which had rolled out mobile banking by the period of study.

3.4 Data Collection

For the purpose of this study, secondary data was used. These dataset included: The return on assets of the commercial banks where the average return for all the banks served as a proxy, the cost of investment in mobile banking, number of customers registered on mobile banking and the number of m-banking transactions served as a proxy. The dataset was drawn from the Financial Statements of each of the commercial banks under study throughout the period of study; these Financial Statements are usually published and also copies reside with the Central bank of Kenya as filed returns. For the purpose of this study, these financial statements will be sourced from the Central Bank of Kenya and the banks' published financial statements for validity. The data covered the period 2008 to 2012.

3.5 Data Analysis

This study investigated the impact of mobile banking on financial performance of commercial banks; that is; whether investment in mobile banking increased or decreased the banks profits. Data that was analyzed for this study entailed of the returns on assets ,m-banking transactions/customers and investment in m-banking for the 25commercial banks that were offering m-banking for the period under study (see appendix 1).The study used both descriptive and inferential statistics in analyzing the data. Analysis was done with the help of Statistical package for social scientists (SPSS version 17). First, data collected was cleaned, sorted and collated. Then, data was entered into the computer, after which analysis was done.

Descriptive statistics such as mean score, frequencies and percentages for each variable was calculated and tabulated using frequency distribution tables, pie charts and/or bar charts. In order to test the relationship between the variables the inferential tests including the Pearson Product-Moment Correlation Coefficient and regression analysis was used. First, Pearson Product-Moment Correlation Coefficient as a measure of association was used to examine the relationship between mobile banking and financial performance. The relations was explored with the use of Pearson's correlation coefficient. Pearson's correlation coefficient calculates a relationship between two variables. Correlation co-efficient is defined as a measure of the strength of linear association between two variables.

Correlation is always between -1.0 and +1.0. If the correlation is positive, we have a positive relationship. If it is negative, the relationship is negative.

Second, regression analysis was used to analyze the impact of mobile banking on bank financial performance. Given the four year panel structure of the sample data gathered, regression analysis was conducted to investigate the relationship between mobile banking on bank financial performance .The regression model that was used is represented as follows;

$$Y = \alpha(\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3) + \varepsilon$$

Where

Y = Financial performance represented by return on assets

X_1 = Investment in mobile banking measured in Kenya shillings.

X_2 = Number of registered mobile banking customers by banks

X_3 = Number of Mobile banking transactions by the banks

α = Size of the bank (measured as a unit in terms of ROA in the sampled 43 banks)

ε = the error term

β_1 $i^{= 1,2 \text{ and } 3}$ are the slope coefficients whose sign depict the relationship between return on assets as a measure of bank and mobile banking proxied by investment in mobile banking measured in Kshs, number of registered mobile banking customers by banks, and number of mobile banking transactions by the banks. A negative/positive relationship is expected between electronic banking proxy measures and bank performance proxy.

In dealing with multi-collinearity between the variables the study proposed to drop the inter-correlated variables from analysis but substitute their cross-product as an interaction term, or in some other way combines the inter-correlated variables. This was equivalent to re-specifying the model by conceptualizing the correlated variables as indicators of a single latent variable.

CHAPTER FOUR
DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter presents analysis of information on findings to establish the effect of mobile banking on the financial performance of Commercial Banks in Kenya. Secondary data spanning a period of 2008 to 2012 was collected from published financial statements and reports of Commercial Banks in Kenya, analyzed and findings are presented in table forms and charts as below. To determine the impact of mobile banking on the financial performance of Commercial Banks in Kenya regression were done for all the period under study on the parameters of the model under study to come up with the model and the parameters relations/correlations to the performance parameter of the banks, in this case Return on Assets.

4.2 Data Analysis and Findings

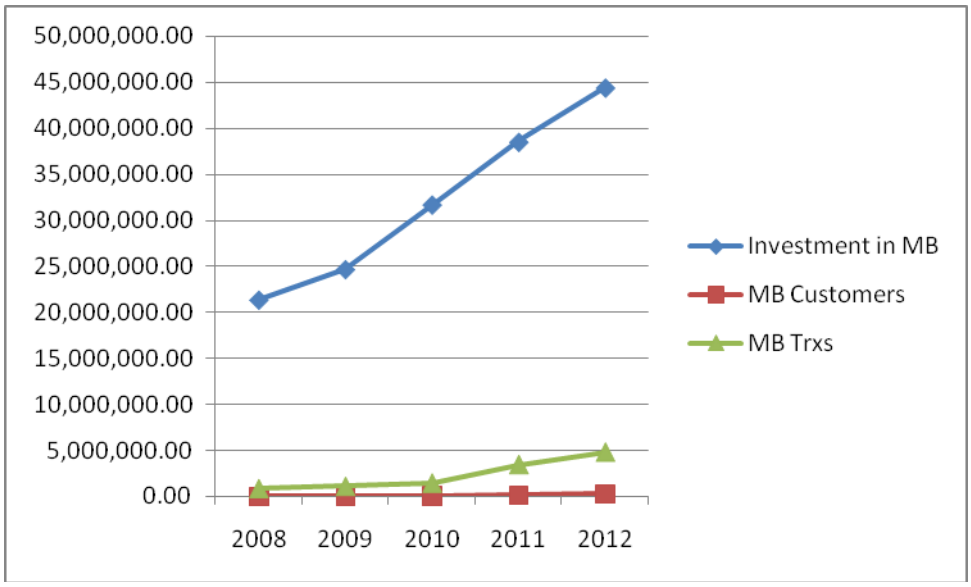
This section outlines a summary of variables under study that is the financial performance represented by return on assets, the investment in mobile banking measured in Kenya shillings, the number of registered mobile banking customers by the banks and the number of mobile banking transactions by the banks and the Return on Assets relations to the averages of all the parameters under study for all the banks, their descriptive statistics, and coefficients of the parameters under study and how they fit in the model and the model excluded variables.

Table 4.1 - Descriptive Statistics

	N	*Variance*	*Skewness*		*Kurtosis*	
	Statistic	*Statistic*	*Statistic*	*Std. Error*	*Statistic*	*Std. Error*
RETURN ON ASSETS	5	.000	-.649	.913	-2.969	2.000
Investment in mobile banking measured in Kenya shillings.	5	.000	-1.101	.913	-.081	2.000
Number of registered mobile banking customers by the banks	5	.000	.708	.913	-2.369	2.000
Number of mobile banking transactions by the banks	5	.000	.749	.913	-2.245	2.000
Valid N (listwise)	5					

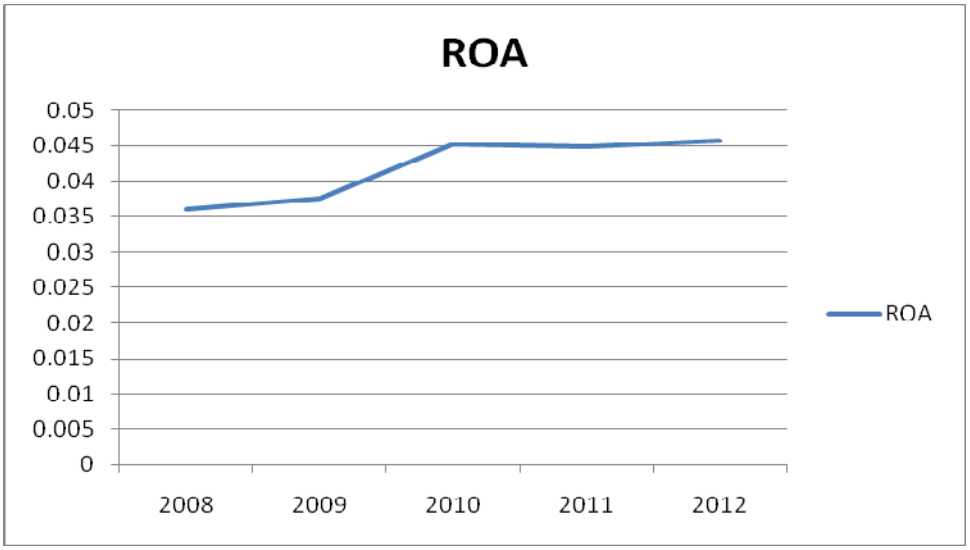
The study looked at the variables under study in a span of five years 2008-2012 with the variables ROA and the investment in mobile banking measured in Kenya shillings having a negative skew or say negatively skewed or skewed to the left. On the other hand the number of registered Mobile Banking customers by the banks and the number of Mobile banking transactions by the banks as per table 4.1.

Fig 4.1 – Independent variable graph



Both the independent variables (The investment in mobile banking measured in Kenya shillings, the number of registered mobile banking customers by the banks and the number of mobile banking transactions by the banks) are on the increase over the study period as per fig 4.1. The number of m-banking transactions increases as more customers are of registered on m-banking The increase in investment in mobile banking results in increase in mobile banking transactions showing that as the banks invest more in m-banking they bring more customers on board and hence increase in m-banking transactions.

Fig 4.2 – Dependent variable graph



The dependent variable (Financial performance represented by return on assets) is on the increase over the study period as per fig 4.2. However there's a slow growth in ROA between years 2008 – 2009 and between years 2010-2012 but a high growth between years 2009 – 2010.

Table 4.2 - Variables Entered/Removed

Model	*Variables Entered*	*Variables Removed*	*Method*
1	The number of mobile banking transactions by the banks. The investment in mobile banking measured in Kenya shillings. The number of registered mobile banking customers by the banks[a]	.	Enter

a. All requested variables entered.

In the model fit for the dependent and the independent variable after a linear regression, all models were found to fit in the model as per table 4.2 giving β coefficients of regression model as presented in table 4.4 below and thus the regression model is as below:

$\gamma = \alpha^{-1} (499.101X_1 - 38087.923 X_2 + 2329.247X_3) - 0.231$

Where:

γ = Financial performance represented by return on assets

X_1 = the investment in mobile banking measured in Kenya shillings.

X_2 = the number of registered mobile banking customers by the banks

X_3 = the number of mobile banking transactions by the banks

α = the size of the bank (measure as a unit in terms of ROA in the sampled banks)

With the β coefficients of regression model within the bounds as below at 95% Coefficient Interval (0.05 significant level) l:

$264.801<\beta_1<733.401$

$-77912.738<\beta_2<1736.891$

$-80.902<\beta_3<4739.396$

And the constant C within the bounds of:

$-.354<C<-.107$

Table 4.3 – Coefficients

Model		Un-standardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	T-test	Significance Level.	Lower Bound	Upper Bound
1	(Constant)	-.231	.010		-23.769	.027	-.354	-.107
	Investment in mobile banking measured in Kenya shillings.	499.101	18.440	.986	27.066	.024	264.801	733.401
	Number of registered mobile banking customers by the banks	-38087.923	3134.281	-8.536	-12.152	.052	-77912.738	1736.891
	Number of mobile banking transactions by the banks	2329.247	189.683	8.555	12.280	.052	-80.902	4739.396

a. Dependent Variable: RETURN ON ASSETS

The t-values in the coefficients table 4.3 indicate the variable's statistical significance. In general a t-value of 2 or higher indicates statistical significance. Each t test examines the hypothesis H_0: $\beta = 0$ for the predictor used.

As in table 4.3 each predictor returned a value and thus indicates we reject the null hypothesis of H_0: $\beta = 0$ for independent variables: the investment in mobile banking measured in Kenya shillings, the number of registered mobile banking customers by the banks, and the number of mobile banking transactions by the banks that returned values 27.066, -12.152 and 12.28 respectively at significant level of .024, .052, and .052 respectively where β is the coefficients. Rejecting the null hypothesis means that we reject the hypothesis that the independent parameters would return null for the coefficients, this is not the case for this study analysis

Table 4.3 also shows that the investment in mobile banking measured in Kenya shillings and the number of mobile banking transactions by the banks have a positive relation to the ROA in that a unit increase in each / or all would result in an increase in the performance indicator ROA, while on the other hand the number of registered mobile banking customers by the banks has an inverse relation to the ROA in the model meaning a unit increase in it would result in an decline in the performance indicator ROA

4.3 Summary and Interpretation of Results

ROA and the investment in mobile banking measured in Kenya shillings are skewed to the left meaning Mode is more than the Mean and the median, i.e. Mode>Median>Mean while the number of registered mobile banking customers by the banks and the number of mobile banking transactions by the banks are skewed to the right meaning Mode is less than the Mean and the median, i.e. Mode<Median<Mean.

All the variables have positive Pearson correlations (bi-variate, i.e. between two variables) between themselves as per the figures in the table above meaning as one variable increases in value, the second variable also increase in value. Similarly, as one variable decreases in value, the second variable also decreases in value. It is also worth noting that these figures are close to 1 meaning a strong positive correlation.

Both the independent variables (The investment in mobile banking measured in Kenya shillings, the number of registered mobile banking customers by the banks and the number of mobile banking transactions by the banks) and the dependent variable (Financial performance represented by return on assets) are on the increase over the study period, however there's a slow growth in ROA between years 2008 – 2009 possibly attributive to the global financial crisis in that period and between years 2011-2012 possibly attributive to political temperature in the country around this time; the a high growth between years 2009 – 2010

After a linear regression, all models were found to fit in the model giving β coefficients of regression model as below:

$\gamma = \alpha^{-1} (499.101X_1 - 38087.923 X_2 + 2329.247X_3) - 0.231$

Where: γ = Financial performance represented by return on assets, X_1 = the investment in mobile banking measured in Kenya shillings, X_2= the number of registered mobile banking customers by the banks, X_3 = the number of mobile banking transactions by the banks and α = the size of the bank (measure as a unit in terms of ROA in the sampled banks). The total Assets α was introduced in the model as a weighting value to standardize the other three independent variables as they were large values and hence the dispersion envisaged would give a misleading relation in regression

In the model, the investment in mobile banking measured in Kenya shillings and the number of mobile banking transactions by the banks have a positive relation to the ROA in that a unit increase in each / or all would result in an increase in the performance indicator ROA, while on the other hand the number of registered mobile banking customers by the banks has an inverse relation to the ROA in the model meaning a unit increase in it would result in an decline in the performance indicator ROA. At 0.05 significance level the β coefficients of regression model were within bounds of $264.801<\beta_1<733.401$; $-77912.738<\beta_2<1736.891$; $-80.902<\beta_3<4739.396$ and the constant C within the bounds of: $-0.354<C<-0.107$ which was reasonable and not that outlying.

The results of this study are in agreement Gakure and Ngumi (2013) findings that revealed that m-banking innovations had a moderate influence on profitability of commercial banks in Kenya. The analysis produced a coefficient of determination of 47.8% which showed that the percentage of variations in profitability which is explained by m-banking innovations. The significance test showed that influence of bank innovations on bank profitability was statistically significant. This means that the combined effect of the m-bank innovations in their research was statistically significant in explaining the profits of commercial banks in Kenya.

This is in agreement with Maina (2012) the study on the contribution of mobile banking to financial performance of commercial banks in Kenya investigated the

relativity between mobile banking and financial performance. The study also sought to find the financial strategies that had been adopted by the institutions to enhance growth and efficiency of mobile banking .From the findings of the study 70% of financial institutions in Kenya had adopted process innovation (mobile banking) which enabled them to serve more clients within a shorter time hence boosting the financial performance over time. She concludes that adoption of mobile banking by financial institutions is very important in improvement of financial adequacy of commercial banks as well as improving operations and reduce costs in the long run hence increase in earnings.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

5.1 Summary

Mobile banking has emerged as a key electronic channel for the global banking and financial service industry. The ubiquitous nature of mobile devices and services and the ability of mobile banking services to reduce overall operational costs, streamline operations and expand customer base have resulted in many commercial banks in Kenya investing large sums of money in information and communication Technology. While the rapid development of information technology has made some banking tasks more efficient and cheaper, technological investments are taking a larger share of bank's resources

The main aim of this project was to establish the impact of mobile banking on overall financial performance of commercial banks; the study chose to look at a four year time horizon of between 2008 through 2012. To understand the background of this, the study looked at literature that explained on this area, theories and past empirical studies that focused on the financial performance of commercial banks. After a rigorous analysis, the study found evidence of relationship between mobile banking and financial performance of commercial banks in Kenya where it analyzed a data set of 25 commercial banks which offer mobile banking to their customers.

Graphical presentation of variables revealed that as the bank performance raises the measures of m-banking were on upward trend. Correlation matrix showed that there is a strong correlation between bank performance and mobile banking. Investments in mobile banking measured in Kenya shillings and the number of mobile banking transactions by the banks have a positive relation to the ROA in that a unit increase in each / or all would result in an increase in the performance indicator ROA

However this study propose further studies on this area especially for the adoption rate of mobile banking ,Considering the immense penetration of cell phones as observed by Maina (2012) banks have very large potential to offer mobile banking services to people living in remote villages compared to the brick and mortar branches. Acknowledging the limitations of access to bank branches as opposed to widespread mobile phone penetration Gakure (2011) suggested that the emerging

mobile banking may give banks a good commercial opportunity providing their services to many unbanked rural people who do not have bank accounts.

5.2 Conclusions

The significance test showed that influence of mobile banking on bank profitability was statistically significant. This means that the combined effect of mobile banking in this research is statistically significant in explaining the profits of commercial banks in Kenya .The study results show that mobile bank has a moderate influence on profitability of commercial banks in Kenya. Thus, there exists positive relationship between mobile banking and bank performance. Based on the summary of the major findings the following it can be concluded that mobile banking offers banks several opportunities for increasing revenues. These include monetizing the value of customer analytics, delivering greater real-time access to products and services, and conducting targeted marketing campaigns based upon the knowledge of consumer preferences that banks collect

The adoption of mobile banking has enhanced Kenyan banking industry by making it more productive and effective. Mobile banking gives banks the potential to expand beyond their geographical footprint as well as ability to cross-sell and up-sell products to existing customers. Banks that harness these additional mobile financial services capabilities can see a profound impact on the nature of the banking relationship

The finding of this study is consistent with similar studies in Saudi Arabia that employed the same methodology and ascertained that availability of mobile banking had a positive effect on profit efficiency of Saudi banks. As Nader (2011) puts it the results showed that the most important determinants of "profit efficiency" were the "availability of phone banking" and the "number of ATMs". Thus, this result was consistent with his idea that availability of mobile banking" is what determines profit efficiency rather than any other determinant in the study.

In Kenyan, it also agrees with Maina (2012) findings which assessed the contribution of mobile banking to financial performance of commercial banks asset selection, revealed that mobile banking contributed to profitability of commercial banks in terms of cost efficiency, from the findings of the study 70% of financial institutions in

Kenya had adopted process innovation (mobile banking) which enabled them to serve more clients within a shorter time hence boosting the financial performance over time.

5.3 Policy Recommendations

Profitability has continued to be a key performance indicator for many companies and an importance reference point for shareholders. The market is also keen on the profitability of organizations. Any ethical and responsible attempt to improve profitability of a company will be appreciated not only by the shareholders but also the government in view of the tax that accrues from profits from corporations. Commercial banks should therefore continue to adopt new technologies which will improve their margins and hence their profitability. Government policy makers should also review policies related to promotion of innovation adoption and transfer of technology. Government should encourage adoption of innovations that will improve profitability of organizations because it will convert to better tax revenues for the government and healthy companies.

The continuing evolution and adoption of mobile banking requires that banks overcome challenges and potential roadblocks — most of which can be mitigated by taking a disciplined and focused approach. As is the case with many emerging markets, the speed of change is rapid, and banks must be prepared to adapt accordingly. Consequently, banks should take steps to differentiate mobile banking from alternative services so that consumers regard banks' offerings as superior. In order to give the growing trends of Information and Communication Technology (ICT) which involves mobile banking and e-commerce in banks a vision in the right directions, banks must be focused in terms of their needs and using the right technology to achieve goals, rather than acquiring technology as a reaction to a competitor's strategy.

In addition, banks should focus on communicating information that emphasizes the relative advantage and usefulness of mobile banking compared to other banking channels like physical presence to the bank or using ATM machines. Banks must seek to reduce risk perceived by their customers by offering specific guarantees protecting them and taking their complaints seriously

Governments should see mobile technology as a vehicle to achieve financial inclusion, especially among the rural and poor population of their countries; and rather than leaving it to for-profit firms who view this as an opportunity to grow and reach new customers. New services typically involve using a mobile phone and its SIM card to store money, make person to person transfers to friends and family, and mobile payments to small merchants. Government participation in ensuring regulation of the telecommunication industry by reducing or removing avoidable costs of implementing mobile commerce and m-banking in order to increase access to mobile devices by the unbaked population. Regulatory authorities like Central Bank of Kenya must stipulate standards for the banks to follow to avoid making Kenya Banking Sector a dumping ground for the outdated technological infrastructures.

5.4 Limitations of the Study

Mobile financial services cover a "broad range of financial activities that consumers engage in or access using their mobile phones, for this study Mobile banking was measured by number of customers registered on mobile banking and number of mobile banking transactions as proxy for m-banking, however, there are other measures of m-banking that can be used. In addition bank performance was only confined to return on assets, there are also other measures of bank performance like return on economic capital (ROEC) that can be used in investigating the impact of mobile banking on profit efficiency of commercial banks.

In seeking for the data for the study, from the outset as was put forth in the proposal for this study, it was to source for data from the banks Channels managers and other published reports and also from the Central Bank, but bank managers were skeptical and not willing to provide such data in fear of such data leaking to the competitors as investment in m-banking is not a public information and thus had to seek data from one side CBK, hence that bit of independent comparison of the filed data with the data as posted to CBK returns was never achieved Collection and analysis of panel data was difficulty .

Over the period of study, macroeconomic factors like inflation, like the in 2012 the overall rate of inflation increased leading to high interests rates that in resulted in banks earning more interest income. Such occurrences could not be regulated during

the period of study, similarly the political environment after 2007-2008 general elections had an impact on the overall financial performance of commercial banks hence this slowed economic activities as well as capital flight could not be explained by the variables in the study

Most large banks have made substantial investments in mobile banking capabilities, and smaller banks have outsourced such capabilities hence it was difficult to ascertain the real cost of investment in mobile banking by the commercial banks. In addition, mobile network providers and some commercial banks have made joint investment in mobile banking platforms.

5.5 Suggestions of Areas for Further Research

Studies linking Mobile banking adoption, use and impact on economic development and wealth creation should also be done in order to assess the impact of mobile banking on the overall economy rather than the narrow focus on Commercial Banks. Just like its other facets in Information and communication technology revolution, mobile-banking increase efficiency, provide access to financial and banking services, create new opportunities for income generation and improving governance. Taking into account developing world's complexity and diversity, specific interventions are required rather than "one-size-fits-all" approaches in leveraging Mobile banking for the unbanked population Consequently there is a need for the government to use m-banking to improve economic development and wealth creation to develop an informed Mobile banking development strategy, for main-streaming Mobile Banking services in the productive sectors as a matter of economic survival.

Research should also be carried out to establish the adoption rate of mobile banking, given that fast advances in the wireless technology and the intensive penetration of cell phones have motivated banks to spend large budgets but the adoption rate of mobile banking could still be underused than expected. Therefore, research to enrich current knowledge about what affects individuals to use mobile banking is required. More studies to investigate what influences people to adopt mobile banking are necessary and demanded. Given that the chance of success in introducing a new product or service is highly related to the depth of understanding of what influences consumers to adopt this new product or service. The findings culled from such

research can help banks execute intricate marketing campaigns and customize service options to cater to specific customer segments in the context of electronic banking.

Nonetheless Restrictions in this study has included using a dataset, with a restriction that only 5 years after adoption of mobile banking, hence studies should be done that will factor the performance of commercial banks before the introduction of mobile banking and after the adoption of mobile banking.

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APPENDICES

Annex I: List of Commercial Banks in Kenya

A complete list of commercial Banks in Kenya (adapted from the published financial statements for all commercial banks as at December 2012)

1. ABC Bank
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank
6. Commercial Bank of Africa
7. CFC Stanbic Bank
8. Chase Bank
9. Citibank NA
10. Consolidated Bank
11. Cooperative Bank of Kenya
12. Credit Bank Ltd
13. Development Bank
14. Diamond Trust Bank
15. Dubai Bank
16. CFC Stanbic Bank
17. Standard Chartered Bank
18. Ecobank
19. Equatorial Commercial Bank
20. Equity Bank
21. Family Bank
22. Fidelity Commercial Bank
23. Fina Bank
24. First Community Bank
25. Giro Commercial Bank
26. Guardian Bank
27. Gulf African Bank
28. Habib AG Zurich Bank
29. Housing Finance
30. I&M Bank
31. Imperial Bank
32. Jamii Bora Bank
33. Kenya Commercial Bank
34. K-Rep Bank
35. Middle East Bank
36. National Bank of Kenya
37. NIC Bank
38. Oriental Bank
39. Paramount Bank
40. Prime Bank
41. Standard Chartered Bank
42. Trans-National Bank
43. UBA

Annex II: Raw Secondary Data

Industry Summation For 25 Banks offering m-banking

Year	Total assets of the bank (in million Kshs)	Bank Profit after tax (in million Kshs)	Expenditure on investments in m-banking (In million Kshs)	No. of registered m-banking customers	No. of m-banking txns
2008	1,031,689.18	37,140.22	532.28	967,512	19,856,655
2009	1,170,818.87	43,924.37	615.44	1,403,044	25,837,959
2010	1,478,732.68	66,936.03	791.48	1,792,602	34,809,618
2011	1,787,111.02	80,283.37	962.19	4,758,880	83,193,747
2012	2,071,472.98	94,767.68	1,109.97	6,619,961	116,039,563

Industry Average For 25 offering m-banking

Year	Total assets of the bank (in million Kshs)	Bank Profit after tax (in million Kshs)	Expenditure on investments in m-banking(In million Kshs)	No. of m-banking txns	No. of registered m-banking customers	Return on Assets
2008	41,267.57	1,485.61	21.29	827,361	40,313	0.036
2009	46,832.75	1,756.97	24.62	1,076,582	58,460	0.038
2010	59,149.31	2,677.44	31.66	1,450,401	74,692	0.045
2011	71,484.44	3,211.33	38.49	3,466,406	198,287	0.045
2012	82,858.92	3,790.71	44.40	4,834,982	275,832	0.046

Annex III: Correlations Table

Correlations

		RETURN ON ASSETS	Investment in mobile banking measured in Kenya shillings.	Number of registered mobile banking customers by the banks	Number of mobile banking transactions by the banks
RETURN ON ASSETS	Pearson Correlation	1	.950*	.714	.720
	Sig. (2-tailed)		.013	.175	.170
	Sum of Squares and Cross-products	.000	.000	.000	.000
	Covariance	.000	.000	.000	.000
	N	5	5	5	5
Investment in mobile banking measured in Kenya shillings.	Pearson Correlation	.950*	1	.712	.706
	Sig. (2-tailed)	.013		.178	.183
	Sum of Squares and Cross-products	.000	.000	.000	.000
	Covariance	.000	.000	.000	.000
	N	5	5	5	5
Number of registered mobile banking customers by the banks	Pearson Correlation	.714	.712	1	.999**
	Sig. (2-tailed)	.175	.178		.000
	Sum of Squares and Cross-products	.000	.000	.000	.000
	Covariance	.000	.000	.000	.000
	N	5	5	5	5
Number of mobile banking transactions by the banks	Pearson Correlation	.720	.706	.999**	1
	Sig. (2-tailed)	.170	.183	.000	
	Sum of Squares and Cross-products	.000	.000	.000	.000
	Covariance	.000	.000	.000	.000
	N	5	5	5	5

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

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