THE EFFECT OF MOBILE BANKING ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA.

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OCTOBER, 2014

DECLARATION

This Research project is my original work and has not been presented for a degree in any other University.

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This Research project has been submitted for examination with our approval as University Supervisor.

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DEDICATION

I dedicate this research project to my wife Eunice and my daughter Lindsey.

ABSTRACT

Innovations such as mobile banking are developed to provide solutions to existing challenges. Although mainly driven by futuristic technology, such solutions are expected to alleviate contemporary issues. In this study, the effect of mobile banking on the performance of commercial banks in Kenya was studied. The descriptive study aimed at identifying the specific effects of adoption and increased usage of mobile banking. The research was performed through a census study of 44 banking institutions in the country focused on establishing the extent to which metrics of financial performance. Through linear regression, the study focused on changes in the volume of deposits and withdrawal, value of loans uptake, payments of utilities, statements requests and funds transfers. The survey resulted to collection of data for 34 of the prospective 44 banking institutions. Through the regression model indicated, the data was analysed. Descriptive statistics indicated that mobile banking had a positive effect on the performance of banking institutions across all variables. ANOVA tests indicated that the effects of mobile banking were statistically significant in predicting the performance of commercial banks in Kenya. Correlation tests indicated a weak positive correlation between the performance of banking institutions and mobile banking in the country. It was thus concluded that mobile banking was fast becoming an integral part of banking in the country, and still presented great potential in its ability to influence the performance of the commercial banks in the country. Future studies focusing on the performance of specific banking institutions spearheading mobile banking is necessary to eliminate the pitfalls and effects of smoothing.

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LIST OF ABBREVIATIONS

ATM	Automatic Teller Machine or Automated Teller Machine
CAMELS	Capital adequacy, Asset quality, Management, Earning, Liquidity and Sensitivity analysis
CBA	Commercial Bank of Africa
CBK	Central Bank of Kenya
CBR	Central Bank Rate
CCK	Communication Commission of Kenya
E-banking	Electronic Banking
E-funds transfer	Electronic Funds Transfer
ICT	Information Communication Technology
IT	Information Technology
KBA	Kenya Bankers Association
M-banking	Mobile Banking
M-transactions	Mobile Transactions
PDA	Personal Digital Assistant
US$	United States of America Dollar

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

According to Tufano (2002), for financial institutions to survive in the new economic environment, research must be done to propagate development of new products and services that meet customer needs and prove profitable. This process is referred to as financial engineering. Philippas and Siriopoulos, (2012) stated that innovation takes the form of new securities, financial markets, products and services, new organizational forms and new delivery systems. Therefore to be successful, financial innovation should help firms either reduce cost and risks or provide a range of improved services that meets the particular needs of financial system participants.

Aduda and Kingoo (2012) observed that due to tight regulation imposed by regulators the banks have come up with new products, services and technologies to avoid the government's regulations and in return the government introduces more regulations to counter the new discoveries. Kane (1984) in his study describes this process of avoiding regulations as loophole mining. The economic analysis of innovation suggest that when the economic constraints change due to regulations made to avoid them, 'loophole mining' and innovation are likely to occur. According to Draghi (2009) regulation must not prevent innovation, which is necessary if we are to improve product choices for consumers and an expanded access to credit. Hence the goal will be to strengthen the resilience of the system without hindering the process of market discipline and innovation that are essential to the financial sector's contribution to economic growth.

Most banks have turned to the mobile phone as a potential platform for financial services delivery to both banked and unbanked customers. This increases the ability to take loans, maintain savings, or make remote payments thereby increasing economic opportunities. Mobile banking is an effective approach in reaching millions of unbanked households, especially those in rural areas with very little investments. Research has shown that access to financial services, and indeed overall financial development is crucial to economic growth and poverty reduction (Kimenyi & Ndung'u, 2009).

Mobile banking refers to the use of mobile devices to offer banking services (Brown, Zaheeda, Douglas & Stroebel, 2003). Customers can use mobile phones or personal digital assistants (PDAs) to deposit and withdraw money from the banks, check balances and statements, make payments, funds transfers and mobile top ups (Porteous, 2006). The technology is being used by the banks today to enhance growth and competiveness (Oluoch, 2012). Firms are developing new and innovative products to be able to maintain existing customers and attract new one. M-banking has changed the way banks perform their operations, this has led to introduction of new products and services that are aimed at lowering costs and reaching a larger number of customers (Oluoch, 2012). M-banking provides the potential of increasing efficiency of payments systems and expanding access to formal financial services by those who presently do not access banking services. It has also made banking services more convenient and cheap to those who already have bank accounts (Porteous, 2006). This will result to improved financial performance of the banking sector.

Although several banks in Kenya have implemented mobile banking technology, there is little research that focuses on impact of mobile banking on financial performance (Aduda & Kingoo, 2012). Most of the past studies have focused on factors affecting the adoption of mobile banking technology and only put focus on customer's uptake. Furthermore, numerous scholars in the developed countries found that m-banking is still at infancy stages (Teo, et al, 2011). Therefore this research will aim at evaluating the effect of mobile banking on financial performance of commercial banks in Kenya.

1.1.1 Mobile Banking

According to Muisyo, Alala and Musiega (2014), mobile banking is the use of a mobile phone or another mobile device to perform a financial transaction linking to a customer's account. Mobile banking can also be defined as provision and availment of banking and financial services through the help of mobile telecommunication devices. The services offered may include facilities to conduct bank and stock markets transactions, administer accounts and to access customized information.

Mobile banking is one of the newest widespread to the provision of financial services through Information Communication and Technology (ICT) made possible by the widespread adoption of mobile phones even in low income countries and has witnessed explosive growth in markets such as Kenya, Philippines and South Africa. In Kenya, the venture of telecom operators Airtel and Safaricom had a ripple effect over financial services, which led them to establish their own mobile banking services to be able to stay in the competition (Abunyang, 2007).

To deepen financial inclusion, mobile phone service providers have taken mobile money services deeper into financial sector. This is through offering a range of financial services such as bulk payments, paybills, funds transfers and enabling depositing and withdrawing funds to commercial banks through use of a phone. The mobile banking have been used lately as a way of competition to increase deposits and offer loans to consmuers without visiting the branches. The mobile banking has also increased the customer base by reaching out the earning groups that did not opeate banks accounts. The banking Sector also use mobile banking a a security by informing customers on all transactions performed in their accounts. Therefore the mobile banking contribute to the financial soundness for the commercial banks in Kenya, (Kimenyi & Ndung'u, 2009).

Mobile banking has helped to transform poeples lives, by offering customer centric products that allow them access banking and payments services without physically visitng the institution hence saving time and travelling cost. The mobile banking services offer a number of services ranging from account information, by alerting customers on the updates and transactions on their account through their phones. Customers use mobile banking in payments of utility bills, deposits, withdrawals, purchases of airtime, funds transfer, bank statements requests among other tasks (Bangens & Soderberg, 2008). These services are offerred in real time hence providing banking services in a convinient and efficient way. With the introduction of new products within mobile banking like M-shwari and M-kesho, customers are able to register for a bank account without necessarly visitng the bank, make deposits and withdrawals often with minimal charges. They can also access micro-loans without collateral or looking for guarantors.

Mobile banking has drastically cut down the costs of providing service to the customers by enabling almost all banking services to be easily accessed through mobile phones. This is the biggest advantage to the commercial banks as a way of reducing oparation costs. Customers now don't need to visit a branch or use a computer to access banking services. They can now do so while travelling or when waiting for their orders to come through in a restaurant.

1.1.2 Financial Performance

Financial performance refers to the financial soundness where deposits are safe in a stable banking system. Some of the measures of financial performance are abbreviated as CAMELS (Capital adequecy, Assest quality, Management, Earning, Equity, Liquidity and Sensitivity analysis) which guides the banking sector to establish their financial soundness (Madhyam, 2010). The activities undertaken in mobile banking contribute to the financial soundness of the commercial banks in Kenya. Some external enviromental factors can cause bank to fail such as deregulation, lack of information among customers and the similarity in services offered by many banks. Therefore the commercial banks have to be innovative and embrace technology to enable them offer diversified products attractive to the customers.

Financial performance is a measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. There are many different ways to measure financial performance, but all measures should be taken in aggregation. Line items such as revenue from operations, operating income or cash flow from operations can be used, as well as total unit sales (Business Dictionary, 2011).

Income is revenue for a particular period normally for one year (Dew, 2007). Profit before tax is a profitability measure that looks at a company's profits before provision of corporate income tax. Profit before tax is the net balance after deducting all expenses from revenue. It can result to a loss before tax if expenses are higher than revenues (Cicea & Hincu, 2009). Return on assets is the total resources owned and controlled by a Bank divided by profit before tax (Dew, 2007). Customer deposit is money placed in a bank for safe keeping and it is a liability by the bank owed to the depositor (Business Dictionary, 2011).

1.1.3 Mobile Banking and Financial Perfomance

According to Mbogo (2011), innovation helps profit maximizing firms to reduce the impact of various types of constraints that reduces profitability. Silber (1975), in his innovation theory points out that the purpose of profit maximization in financial institution is the key reason of financial innovation. 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. It 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 can see a profound impact on the nature of the banking relationship.

Goodhue and Thompson (1995) in his Task Technology Fit theory states that it is more likely to have a positive impact on individual performance and be used if the capabilities of Information Communication and Technology (ICT) match the tasks that the user must perform.

Like automated teller machines “ATMs” and online banking services, smart phones are giving consumers more options. By being able to access account information and perform transactions without requiring access to bank branches, ATMs, or computers, consumers are able to “bank” wherever and whenever they want and they are learning to expect such convenience. Most large banks have made substantial investments in mobile banking capabilities, and smaller financial institutions are not far behind. In addition, mobile networks carriers, credit card processors, and online personal finance services that allow consumers to aggregate their accounts on a single web site or app are among the many nonbanks jockeying for position in this fast-growing space.

According to a research by mbiti & Weil (2011), banks can realize operational efficiencies by adopting an integrated channel strategy that includes mobile banking. According to their analysis, a bank with about 100 branches and 250 ATMs, and an average daily deposit/withdrawal volume of 165 branch transactions and 65 ATM transactions, could expect to save about $5 million annually if the bank were able to convert 20% of those branch and transactions to its mobile channel. Features such as remote check deposit or person to person will enable those transactions to take place through the mobile channel and reduce dependency on branches or ATMs. The more transactions that banks can drive to mobile phones, the greater the possibility that the can close poorly performing branches and increase operating efficiencies by shifting the focus of branch employees from transactions to more advisory-type services that will lead to greater sales or cross-selling rates (Dasgupta, Paul, & Fuloria, 2011).

According to Aker and Mbiti (2010), there is a strong correlation between mobile phone coverage, the types of services offered, the price of such service, and firm performance.

In markets with limited competition, profit-maximizing firms to offer more limited services at higher prices. Rayhan, et al, (2012) in their study on mobile banking in Bangladesh concluded that, mobile phone banking offers the potential to extend low cost virtual bank accounts to a large number of currently un-banked individuals. Mobile phones enhance the ability of electronic banking solutions to offer customers an enhanced range of services at a low cost. Mobile banking is real time on-line banking, available anytime, anywhere throughout the country, it is convenient, affordable and secure and therefore it is much more effective in developing savings habits and hence leading to increase in bank deposits. Mobile phone also makes access to banking and advanced payment transactions at affordable cost. A positive aspect of mobile phones is that mobile networks can reach remote areas at low cost both to the consumer and the bank, as postulated by Mbiti and Weil (2011).

1.1.4 Commerical Banks in Kenya

Aduda and Kingoo (2012) pointed out that commercial bank is a financial institutions carrying out businnes activies such as accepting and safeguarding deposits, giving business loans and auto loans, mortgage lending, and basic investment products like savings accounts and certificates of deposit. The traditional commercial bank is a brick and mortar institution with tellers, safe deposit boxes, vaults and ATMs. However, some commercial banks do not have any physical branches and require consumers to complete all transactions by phone or Internet. In exchange, they generally pay higher interest rates on investments and deposits, and charge lower fees (Business Dictionary, 2011). The Banking Act of Kenya defines banking to mean the accepting from members of the public money in form of deposits repayable on demand or at expiry of

fixed period or at notice. The acceptance of cheques and and issuing of this money in form of loans to customers, investing in other activities like shares in order to generate revenues.

The Kenyan banking sector comprised of 44 commercial banks, of this 31 are locally owned and 13 have foreign ownership structures. The government has a substantial shareholding in three of the commercial banks. The other remaining local banks are largely owned by families. There is 1 mortgage finance company, 6 deposit taking microfinance institutions, 2 credit reference bureaus, 3 representative offices and 124 foreign exchange bureaus (CBK, 2011). The banks are regulated by the Central Bank Act and the Companies Act, which define the activites that commercial banks should engage in. It also defines the rules of publishing financial statements, minimum capital requirements as well as reserve requirements.

In Kenya, effective use of Information Technology (IT) has led to better utilisation of personnel and organisations assets, increased revenues and increased access to financial services by the general population (Mwania & Muganda, 2011). In only four years (2007-2011) of the existence of mobile phone money transfer services in Kenya; four mobile phone operators namely safaricom, Yu, Airtel and Orange are in place with 15.4 million customers and over 39,449 agents. Total transactions in 2010 averaged Ksh .2.45 billion a day translating to Ksh.76 billion a month resulting to lower transaction costs and increased access to financial services. This depicts a very productive market for mobile money transfers .

Majority of Kenyans use mobile phones for payment of bills and money transfers, making banks deposits and evening borrowing short loans (Aduda & Kingoo, 2012). The latest survey by the Kenya Bankers Association (KBA) shows six out of every ten Kenyans interviewed send and receive money through their mobile phones.

Only three out of every ten Kenyans go to banking halls, while only eight per cent use the Automated Teller Machines. The rest prefers to use mobile banking or visit banks agents close to their surroundings. The lenders have increased the usage of mobile banking platforms in their banking transactions with 60 per cent of Kenyans now using mobile phones for financial or banking transactions, (Standard Newspaper 22 Jan, 2014).

Despite prevailing economic conditions, the banking industry in Kenya has in the past always recorded impressive results with a growth in profitability. The growth in profitability has been at a time when inflation rate in Kenya was increasing and the country was experiencing slowed economic growth. The Central Bank Rate (CBR) base rate, for instance, rose significantly to 18 percent and 17.75 per cent respectively during 2011. Under such economic environment, most industries are expected to register a decline in profitability, which was not the case in the banking industry, which registered growth and tremendous increase in profits. This growth in profit was brought in by increase in innovate banks products and embracing of technology by majority of the banks. Majority of the customers who could not access banking services have either registered a new account or perform many transactions in a day as compared to the past where they had to visit the branch to access the banking services.

1.2 Research Problem

In the recent past there is a fundamental assumption that technological innovations have resulted to operations improvement in commercial banks which has directly improved their financial performance (Mbiti & Weil, 2011). Though there could be a significance improvement, there is need for management in the banking sector to carry out strategic analysis that will bring in effective systems to be used with minimal uncertainty and can sustain their operations while

minimizing the risks involved through technological innovations. Banks performance is directly dependent on efficiency and effectiveness of mobile banking, therefore, tight controls and standards must be put in place to prevent losses associated with efficiency of mobile banking. This can only be possible if the effects of mobile banking on banking sector and its customers are well analysed as indicated by (Ndung'u, 2013).

Mobile banking has become an important aspect of banking, having become integrated in the normal banking activities. In Kenya, mobile banking plays a role in a range of banking products and services including the following. First, mobile banking provides interfaces for transfer of funds from one account to the other (Oluoch, 2012). Funds transfer through mobile banking facilitates movement of funds from one account to the other. This increases the number of transactions handled by a banking institution, thus increasing the number of services used. Secondly, balance inquiry and statement request makes it possible for customers to manage their deposits more efficiently. The increased access to information increases the ability to make economic decisions. In addition, the service charges associated with balance inquiry makes it possible for banks to generate returns (Aduda & Kingoo, 2012).

Third, payment of utility bills provide banks with short-term liquidity and revenues through service charges. The access to short-term liquidity influences the ability of banks to manage operations as well as handle cash. Most of the users of mobile devices prefer to pay utility bills though ‘pay bill’ and ‘buy goods’ services, which result to time and place utility. As a result, the banking institution is able to attract novel customers, and extent banking services to individuals who were previously unbanked. As a result, mobile banking provides commercial banks with the opportunity to expand operations and attract new customers (Bangens & Soderberg, 2008).

New addition to mobile banking services through segment-based strategies have made it possible for customers to access deposit and loan facilities (Kimenyi & Ndung'u, 2009). Although at a micro-level, access to deposit and loan facilities makes it possible for households to manage their finances, while joining financial institutions. By developing a culture of banking through savings and access to loans, mobile banking orients these individuals to mainstream banking.

Many studies have been done to establish importance of financial innovation on banking performance but have not checked on all variables of mobile banking and their impact on financial performance. For instance Mutua (2012), in her study on effects of mobile banking on financial performance of commercial banks in Kenya, she only focused on the monthly volumes moved through mobile banking and the cost involved in implementing the mobile banking technology. Ngumi (2013), in his study of bank innovations and financial performance of commercial banks in Kenya, mainly focused on mobile phone subscription and internet subscription as moderating variables and their impact on financial performance. Mbilo (2012), in his study of mobile banking and its effects on financial performance on Uganda's commercial banks focused on mobile banking adoption and its improvement on banking services.

A study by De Young, Lang and Nolle (2007), adopted an approach to the innovation performance relationship which does not take into account the antecedents to innovation inside and outside the banking organization, all of which could influence this relationship. The impact of innovation on performance, is still misunderstood for two main reasons, first, there is inadequate understanding about the drivers of innovation and secondly innovations impact on bank’s performance remains lowly untested (Mabrouk & Chokri, 2010).

It is clear that all the above studies did not focus on how mobile banking services namely; Mobile banking deposits and withdrawals, mobile loans uptake, mobile statements requests and mobile funds transfers have impacted on financial performance of commercial banks in Kenya. In order to address this research problem, the research question will be: What is the effect of mobile banking on the financial performance in Kenyan Commercial Banks?

1.3 Research Objective

To establish the relationship between mobile banking and financial performance of Commercial Banks in Kenya.

1.4 Significance of the Study

This study is of help to the Central Bank of Kenya as it seeks to leverage on technology to grow the financial services sector and enhance financial access and inclusion. One of the key drivers of change in Kenya is information technology and innovations. Through the findings of the study, the government of Kenya is able to support the banking sector by either enhancing security or other regulations that governs mobile banking. The study findings can help banks in evaluating the importance of Mobile banking as a financial innovation on their performance in terms of increase in profitability.

The executive members of commercial banks in Kenya will learn from this study and understand the mobile banking as a financial innovation strategy that they can replicate in their businesses in order to improve on their performance. They will also learn the measures in terms of policies and

procedure to put in place to enhance security and quality of transactions while carrying out mobile banking services.

To the scholars, the study is value-added to the existing body of knowledge as it recommends ways for improvement of financial performance by leveraging on technology innovations such as mobile banking. It will act as a valuable tool for academicians, institutions, managers and other individuals who want to learn more about mobile banking.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on mobile banking as financial innovation. It discusses the key theories underlying mobile banking on commercial banks in Kenya, develops a conceptual framework and expounds on the research gaps on mobile banking and financial performance. The chapter includes a review of detailed and related literature based on nature of banking sector in Kenya, various services offered by mobile banking, benefits of mobile banking, key challenges and relation of mobile banking to financial performance.

2.2 Theoretical Review

The theoretical framework helps to make logical sense of the relationship of the variables and the factors that have been deemed relevant to the problem. It provides definitions of the relationship between all the variables so that the theorized relationship between them can be understood. The theoretical framework will therefore guide the research, determining what factors will be measured and what statistical relationship the research will look for.

2.2.1 Schumpeterian Theory of Innovation.

Schumpeter first provided the most tangible theory on innovation in 1934 (Schumpeter, 2008). By considering consumers as passive players in the establishment of the unusual approaches to satisfaction of needs and wants, Schumpeter indicated that innovation is the foundation of profitability and competitive advantage. The Schumpeterian Theory of Innovation essentially explains economic change and the entrepreneur is the central innovator.

According to Piore (2007), Schumpeter identified that society thrives the ability to uphold contradictions and antagonistic tendencies. The existence of these contradictions provides the impetus for instrumental thought in the process of establishing solutions to bridge the divide. As a result, the qualitative and quantitative aspects of innovation were founded on establishment of new combinations of existing resources. Although the emergence of novel resources was still possible, Schumpeter identified the inverse relationship between resistance to change and innovation (Fagerberg, 2003). The static nature of innovation propagated the clustering of innovation in specific industries, albeit for a specific period.

He disagreed with the policy implications of Keynes ideas and theories because they were opposed to what was appearing as driving force in the economy .i.e. private initiative rather than public policy (Spiegel, 1991). He found that innovations were discontinuous in the time axis, due to the abilities and qualities requires in human resources to manage and develop it (Scumpeter, 1934). He tried to explain how innovation appeared and the change happened through a virtuous spiral of mutual attraction where a successful entrepreneur attracted new entrepreneurs to a geographical area.

Through his study on the role of innovation, Schumpeter still did not really explain the source of innovation. He was able to point to its importance and its role in timing economic cycles but did not address its source. This rather interestingly allowed Keynesian economics to argue that levels of investment were the cause of innovation. In 1960s other economists began to search for the source of innovation. The importance of innovation was highlighted by researchers like Abramovitz (1956) who demonstrated how little neo-classical economics was able to explain.

Based on data on the United States economy from 1909-49, Solow showed that only 12.5 percent of the increase of per capita output could be traced to increased use of capital. This left a surprisingly large 87.5 percent residual that Solow attributed to technical change. Schumpeter's assertions have been supported by Porter (1992) that innovation is vital for a country's long-run economic growth and competitive advantage. Porter (1992) argues that to compete effectively in international markets, a nation's businesses must continuously innovate and upgrade their competitive advantages. Innovation and upgrading come from sustained investment in physical as well as intangible assets. Financial markets play critical roles in mobilizing savings, evaluating projects, managing risk, monitoring managers, and facilitating transactions.

2.2.2 Market Power and Efficiency Structure Theories

The original market power theory was presented by Muller in 1983 (Catena, 2000). According to the theory, acquisition of market power through superiority in product characteristics provides banking institutions with the ability to expand market share, demand higher prices for their products and services and ultimately achieve higher returns. More refined studies carried out by Chortareas, Garza-Garcia and Girardone (2005) inculcated efficiency into market power, aligning activities aimed at accentuating the operations of the financial institution. Jeon and Miller (2005) established that changes in operating structures and products have become more apparent after change in regulatory foundations of the banking industry. Jeon and Miller (2005) employed the Herfindal-Hirschman Measure of concentration to determine whether the performance of banks was determined by market power efficient structures. In a study, they separate the theory into two aspects, capturing the two hypotheses contained in the relative market power and contemporary structure-conduct-performance paradigm.

The theory states that increased external market forces results into market power which is defined as the capacity of an organization to increase its prices without losing all its clients. In banks, Market Power can take two forms: differentiation of products and services, or ease of search. There is a trade-off between differentiation and loss of legitimacy which is optimised at a strategic balance point. Likewise, there is a trade-off between ease of search and security that must be taken into account.

This theory categorizes Information Communication and Technology (ICT) investments into Market-Power driven initiatives profit. Moreover, the hypothesis suggest that only firms with large market share and well differentiated portfolio can win their competitors and earn monopolistic profit. Efficiency structure theory (ES) suggests that enhanced managerial and scale efficiency leads to higher concentration and then to higher profitability. According to Obamuyi (2013) balanced portfolio theory also added additional dimension into the study of bank performance. It states that the portfolio composition of the bank, its profit and the return to the shareholders is the result of the decisions made by the management and the overall policy decisions.

2.2.3 Task Technology Fit (TTF) Theory

According to Goodhue and Thompson (1995), this theory states that it is more likely to have a positive impact on individual performance and be used if the capabilities of Information Communication and Technology (ICT) match the tasks that the user must perform. Originally, Goodhue and Thompson focused on conceptualization of the technological aspects, thereby bypassing the ‘matching’ aspects of the theory. As a result, quantification of parallel units still remains an uncharted aspects of TTF theory.

This results to a high level of subjectivity in application of the theory. He mentioned the factors that measure task-technology fit as; quality, locatability, authorization, and compatibility, eases of use/training, production timeliness, systems reliability and relationship with users. The model is useful in the analysis of various context of a diverse range of information systems including E-commerce systems and combined with or used as an extension of other models related to information systems outcomes.

The theory of task-technology fit maintains that a match between business tasks and information technology is important to explain and predict the success of information, Task Characteristics Technology Characteristics, Task- Technology Fit, Performance Impacts and Utilization (Goodhue and Thompson, 1995). For various scenarios of task and technology, statistical significance has been established of a positive association between task-technology fit and information system success measures, such as use (Dishaw & Strong, 1999), and impact on individual performance (Goodhue and Thompson, 1995) and on group performance (Zigurs et al., 1999). The concept of task-technology fit promises to help identify aspects that are critical to support a given business task, and can contribute to the success of technology innovations (Junglas & Watson, 2006). One such innovation is represented by mobile technology to support an increasingly mobile workforce (Barnes, 2003).

Upon applying the theory of task-technology fit to mobile information systems, however, it becomes apparent that previous studies have focused mainly on the functionality that is provided by the technology, and have paid less attention to the context in which the technology is being used (Perry, O'Hara, Sellen, Brown & Harper, 2001). At the same time, usability studies suggest that the use-context may have a non-trivial impact on the conditions of task-technology fit (Perry

et al., 2001). First, it can be observed that non-functional features, such as weight and size, play a more prominent role in mobile than in non-mobile use contexts (Gebauer & Ginsburg, 2006). Second, functional requirements may shift as business tasks are often performed differently in mobile versus non-mobile use contexts (Gebauer & Shaw 2004; Perry et al., 2001). As a result of the observable changes of business tasks and related technology requirements, it becomes necessary to assess the applicability of the theory of task-technology fit to mobile technologies and mobile use contexts, and to carefully determine the needs for theory adjustments and extensions (Junglas & Watson, 2006; and Lyytinen et al. 2004).

2.3 Determinants of Financial Performance in Commercial Banks

According to Flamini, McDonald and Schumacher (2009), financial performance refers to the stability or soundness of financial institutions where depositors funds are safe and stable. The measures of financial performance in the banking sector are capital adequecy, asset quality management, earnings, equity, liquidity and sensitivity analysis, which guides the banking sector to establish their financial soundness. A study performed by Grigorian and Manole (2002) indicated that the financial soundness of a financial institution may be strong or unsatsfactory varying from one bank to another. The activities taken by mobile banking being independent variable contributes to financial soundness of commercial banks in Kenya.

2.3.1 Size of the Bank

According to Bentum (2012), the size of a banking institution is relevant to its performance. The study carried out in Ghana established that the performance of banking shares can be attributed to the market share and size. This is due to the associated capacity to provide a large magnitude

and range of products to its customers (Boyde & Runkle, 1993). In addition, the economies of scale also affects the aspects of performance for banking institutions. The ability to enhance performance through reduction of costs and increase in efficiency makes alrger institutions more viable. The size of the instution is also relevant to risk diversification. Empirical evidence provided by Akhavein, Berger and Humprey (1997) indicated that larger banks are more resilient during times of economic downturn, due to the aspects of risk diversification.

However, a study by Kaekrah and Ameyaw (2010) established an inverse relationship between risk diversification and performance of banking insitutions. In the study, it was observed that banking institutions classified as large in size performed worse than the small and medium banking institutions. This due to the low level of interest margins commonly observed in large banks, a scenario which is not duplicated in small banking instutitions. Research by Boyd and Runkle (1993) pointed towards the ability of banking institutions to reduce marginal operating costs is most prominent in large institutions. However, this is also limited to an extent of the banking institution to overcome the effects of bureaucacry in operations. In some instances, the principle of 'too large to fail' affects the performance of banks, as observed during the previous credit crisis in the US. Most of the large banking institutions were provided with liquidity on custom basis, aimed at ensuring that operations were financed.

2.3.2 Net Interest Margin

NIM is a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders for example, deposits, relative to the amount of their interest- earning assets. It is usually expressed as a percentage of what the financial institution earns on loans in a specific time period and other assets minus the interest paid on borrowed

funds divided by the average amount of the assets on which it earned income in that time period i.e the average earning assets. The NIM variable is as the net interest income divided by total earnings assets (Gul et al., 2011). Net interest margin measures the gap between the interest income the bank receives on loans and securities and interest cost of its borrowed funds. It reflects the cost of bank intermediation services and the efficiency of the bank. The higher the net interest margin, the higher the bank's profit and the more stable the bank is. Thus, it is one of the key measures of bank profitability. However, a higher net interest margin could reflect riskier lending practices associated with substantial loan loss provisions (Khrawish, 2011).

2.3.3 CAMEL Rating System

Nimalathasan (2008) pointed out to the CAMEL rating system provides a range of factors that affect the performance of banking institution, in addition to providing a measure. This system provides an indication of the safety and soundness of the operations at an institutional level by targeting five relevant aspects including capital adequacy, asset quality, management quality, earning ability and liquidity. These five factors are considered relevant to performance due to their effect on efficiency and effectiveness.

Capital adequacy determines how well financial institution copes with shocks to their balance sheet of a company (Kamukama & Tumwine, 2012). Capital adequacy in commercial banks is measured in relation to the risk weight assigned to the different category of asset held both on and off the balance sheet item on Kenya commercial banks. According to Mugembe (2008), asset quality is the solvency of financial institutions typically when their assets become impaired. So it’s important to monitor indicator of quality, assets of financial institutions in Kenya in term

of over exposure to specific risk trends in non- performing loan, the profitability and health of bank borrowers especially the corporate sector.

According to Ceylan, Emre and Aslı (2008), earnings determine the ability to earn an adequate return on assets and capital which is depended on the continued viability of a bank. Good earnings performance enables a bank to fund its expansion hence remain competitive in the market and replenish and generally expand/ increase on its capital. In accordance with Grier's (2007) opinion, a consistent profit not only builds the public confidence in the bank but absorbs loan losses and provides sufficient provisions. It is also necessary for a balanced financial structure and helps provide shareholder reward. Thus consistently healthy earnings are essential to the sustainability of banking institutions. Profitability ratios measure the ability of a company to generate profits from revenue and assets.

Indicators should cover funding sources and capture large maturity mismatches Mugembe (2008). An unmatched position potentially enhances profitability but also increase the risk of losses. According to Cicea and Hincu (2009), commercial banks represent the core of the credit for any national economy. In turn, the credit is the engine that put in motion the financial flows that determine growth and economic development of a nation. Therefore, any efficiency in the activities of commercial banks has special implications on the entire economy. In this case management of every commercial bank must establish a system for assessing investment performance which suits its circumstances and needs and proper evaluation must be done at consecutive intervals to ensure the achievement of the Bank's investment objectives and to know the general direction of the behavior of investment activity in the past and therefore predict the future (Krakah & Ameyaw, 2010).

Frost (2004) stresses that the asset quality indicators highlight the use of non-performing loans ratios (NPLs) which are the proxy of asset quality, and the allowance or provision to loan losses reserve. According to Grier (2007), “poor asset quality is the major cause of most bank failures”. One most important asset category is the loan portfolio; the greatest risk facing the bank is the risk of loan losses derived from the delinquent loans. The credit analyst should carry out the asset quality assessment by performing the credit risk management and evaluating the quality of loan portfolio using trend analysis and peer comparison. Measuring the asset quality is difficult because it is mostly derived from the analyst’s subjectivity.

Grier (2007) suggests that management is considered to be the single most important element in the CAMEL rating system because it plays a substantial role in a bank’s success; however, it is subject to measure as the asset quality examination. Management quality refers to the capability of the board of directors and management, to identify, measure, and control the risks of an institution‘s activities and to ensure the safe, sound, and efficient operation in compliance with applicable laws and regulations (Uniform Financial Institutions Rating System 1997).

2.3.4 Range of Products and Services

The banking sector thrives on innovation and development of custom-designed products. The changing consumer needs provide a trajectory for growth and development (Ndung'u, 2013). Considering that the number of potential customers grow exponentially, the performance of a banking institution is dependent on its ability to provide differentiated products. Mbiti and Weil (2011) posited that differentiation and segmentation enhances adoption of products, since the various customer segments gain access to products which meet their expectation. As a result, in addition to the contemporary deposit and loan facilities, banks have to design new products.

The new products create new demand from the customers, thus increasing the level of satisfaction. In addition, these new products make it possible for banking institution to reach new customer segments (Grigorian & Manole, 2002).

2.4 Empirical Literature

In a study done by AKI (2002) on the impact of technology in banking sector, the researcher established that new technologies cannot replace the branch network but these can support old methods of delivering the services. The author evaluated the structural change in Finnish banking sector from the period 1993 to 2002 which showed that 42 per cent of households have internet connection with banks and 90 per cent have mobile banking services. The author concluded that main goals of management of technology were to improve customer satisfaction, reduce cost and develop new methods to collect and analyze the customer information.

Durkin and Howcroft (2003), evaluated the banker-customer relationship using Technology Acceptance Model and found that, the relationship was improved through mobile, phone and internet banking. The authors found that the mobile banking has made the banks very competitive and profitable and internet has played a key role in it. Perception of bankers and customers regarding the use of internet was examined. They pointed out that as consumer usage of remote bank delivery channels increases, relationship management will become more important. Further, the combination of traditional and new delivery channels, if followed, can help to improve their productivity and profitability.

By employing innovation diffusion theory and the decomposed theory of planned behavior, Brown et al. (2003) surveyed 162 respondents and discovered that perceived advantages, the

opportunity to try out cell phone banking, the number of banking services required by respondents and perceived risk significantly influenced people to adopt mobile banking. Lee et al. (2003) performed eight interviews to collect transcripts from participants and concluded that relative advantages and compatibility were positive factors affecting the adoption of mobile banking, perceived risk was negative factor affecting the adoption of mobile banking, and consumer previous experience and self-efficacy generalised their beliefs (a negative or positive attitude) toward the adoption of mobile banking.

Suoranta and Mattila (2004) researched on Bass model of diffusion to separate 1253 respondents into non-users, occasional users, and regular users according to their mobile banking usage experience and density. The Bass diffusion model assumes that potential adopters of an innovation are influenced by two types of communication channels: mass media and interpersonal word-of-mouth, and the adoption rate can be described by S-shaped diffusion curves. The study empirically identified that interpersonal influence was over mass media in affecting users to adopt mobile banking. Contrasting to the study, Laforet and Li (2005) surveyed 128 respondents randomly selected in the city streets and indicated that awareness significantly influenced the adoption of online and mobile banking, while consumer awareness was effectively increased through mass media rather than word-of-mouth communications. Given that the reference group did not significantly affect the adoption of online and mobile banking, thus contended that mass media was much more important than interpersonal word-of-mouth in affecting people to adopt mobile banking (Ceylan & Emre, 2011).

By looking at trust and resources, Luarn and Lin (2005) employed the extended technology acceptance model to explore human behavioral intention to use mobile banking. They collected

180 respondents in Taiwan and found that perceived self-efficacy, financial cost, credibility, easy-of- use and usefulness had positive effects on the behavioral intention to use mobile banking. Likewise, due to the parsimony and predictive power of Technology acceptance model, Amin et al. (2008) used an extended research containing five constructs - perceived usefulness, perceived ease-of-use, perceived credibility, the amount of information, and normative pressure - to explore the adoption of mobile banking. They gathered 158 valid questionnaires in Malaysia and supported that perceived ease-of-use markedly influenced perceived usefulness and credibility, and human intentions to adopt mobile banking was significantly affected by perceived usefulness, perceived ease-of-use, perceived credibility, the amount of information, and normative pressure

A study was done by Laukkanen et al (2007) summarizing 18 factors into five barriers, namely Usage, Value, Risk, Tradition, and Image barriers. The theory of innovation resistance, adapted from the psychology and the IDT of Rogers (Rogers 2003), aims to explain why customers resist innovations even though these innovations were considered necessary and desirable. Through investigating 1525 usable respondents from a large Scandinavian bank, the study uncovered that the value and usage barriers were the most intense barriers to mobile banking adoption, while tradition barriers (such as preferring to chat with the teller and patronizing the banking office) were not an obstacle to mobile banking adoption.

Another study was carried out by Yang (2009), employed the Rasch measurement model and item response theory to survey 178 students from one of largest university in south Taiwan. He found that the speed of transactions and special reductions in transaction fees encouraged mobile baking adoption, while factors inhibiting mobile banking adoption were safety and initial set-up

fees. Similar to the finding of Cruz et al (2010) surveyed 3585 online respondents in Brazil and supported that the cost of Internet access and service and perceived risk were top two barriers for adopting mobile banking services.

Puschel et al. (2010), researched on adoption of mobile banking, he studied the factors that influences individuals to use the mobile banking services. Similar studies on the effect of mobile banking were carried out by King (2012) and Mbiti and Weil, (2011). The study employed the unified theory of acceptance and use of technology (UTAUT) to investigate what impacts people to adopt mobile banking. Through sampling 441 respondents, the study empirically concluded that individual intention to adopt mobile banking was significantly influenced by social circles, perceived financial cost, performance expectancy, and perceived credibility, in their order influence strength. The behavior was considerably affected by individual intention and facilitating conditions. The study discovered that gender significantly moderated the effects of performance expectancy and perceived financial costs on behavior intention. The age considerably moderated the effects of facilitating conditions and perceived self-efficacy on actual adoption behavior.

Aduda and King'oo (2012) performed a descriptive study to establish the relationship between financial performance among commercial banks in Kenya and E-banking. Through operationalisation of return on assets as the dependent variable and various aspects of e-banking, the researcher determined that e-banking had a positive effect on the banking industry in Kenya. In addition to being an innovative approach to access to banking services, the technology positively influenced ease of banking and the profitability of institutions in the banking industry.

A similar study was carried by Ndung'u (2013) who sought to determine the impact of mobile and internet-banking on performance of financial institutions in Kenya where the survey was conducted on financial institutions in Nairobi. The study also sought to identify the extent of use of mobile and internet banking in financial institutions. The study investigated 30 financial institutions. The study found that the most prevalent internet banking service is balance inquiry while the least is online bill payment. Cash withdrawal was the most commonly used mobile banking service whereas purchasing commodities was the least commonly used.

The empirical study has bought in the following conclusion; relative advantage, trial ability, number of banking services, and risk significantly influence mobile banking usage. Secondly, Information sources (i.e., interpersonal word-of-mouth), age, and household income significantly influence mobile banking adoption. To add on this, awareness, confidential and security, past experience with computer and new technology are salient factors influencing mobile banking adoption .Moreover, perceived self-efficacy, financial costs, credibility, easy-of-use, and usefulness had remarked influence on intention to adopt mobile banking, perceived benefits (i.e., location free and efficiency) are main factors encouraging people to adopt mobile banking .

2.5 Summary of Literature Review

The purpose of literature review was to bring in a relationship between mobile banking and financial performance of commercial banks in Kenya. The conclusion was contextually drawn from the relationship between the indicators of mobile banking and financial performances, money transfers across accounts, balance enquiry and payments of utility bills. For instance funds transfer means availability, accessibility, this has led to increased transactions through the bank hence customers depositing heavily with banks, leading to high liquidity of the banks

which the bank uses to make profits. There is also increase on uptake of loans through innovation of virtual accounts like M-Shwari, leading to increase in interest rates charges. Balance enquiry and mini statements requests using mobile phones enhance convenience of the customer hence customer loyalty and improving customer base. This makes customer access more banks products that increases the bank profits. Payment of utility bills through mobile phones have made customers lives more convenient and has encouraged more customers to bank their money with commercial banks for ease payments.

From the review of relevant literature, it is evident that research in the area of mobile banking has been done but not in a comprehensive approach, there exist a conflict in the studies. All the literature reviewed indicates that previous researchers only concentrated on a few variables of mobile banking especially on adoption and amounts while this study covers additional important variables that were omitted by previous studies like increase in number of transactions in form of deposits, withdrawals and loans uptake, pay bill services, statements request and quality of services offered by commercial banks through mobile banking. This makes the study more comprehensive. From survey of relevant literature, it has been found that there are few studies specific to Kenya on the link of mobile banking and performance of commercial banks and they omitted moderating variables such a security and quality of services. This study therefore intends to fill in gaps in literature by studying the effects of mobile banking on financial performance in Kenya on selected key performance indicators of commercial banks in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter is aimed at explaining the research design that was used in carrying out the study, the target population, sampling techniques, data collection procedures, the instruments that were used, and the method applied to analyse data. A research methodology is described as a part that must explain technical procedures in a manner appropriate for the audience as indicated by Zikmund, Babin, Carr and Griffin (2010). This is achieved by addressing the research and sample designs used for the study, the data collection and fieldwork conducted for the study and the analysis done to the collected data. In addition, Dawson (2009) states that research methodology are the philosophy or general principle which guides the research.

3.2 Research Design

A research design involves a plan for selecting subjects, research sites and data collection procedures to answer the research questions (Kothari, 2004). It is a conceptual framework within which research is conducted and constitutes the guide for the collection of data and the analysis thereof of the collected data, as indicated by Mcmillan and Schumaker (2001).

This study adopted a descriptive research design. It is a type of non-experimental research design for collecting and analyzing data in order to describe the problem in its current status (Dawson, 2009). The design allowed researchers to gather information, summarize, and present it for the purpose of clarification (Orodho, 2004). This method is appropriate due to its capacity to establish whether mobile banking has an impact on financial performance of commercial banks in Kenya.

3.3 Population

The population of interest in this study consists of 44 commercial banks operating in Kenya, all of which have already implemented mobile banking technology. The study focused on three financial years, checking on the impact of mobile banking on the performance. The study therefore used stratified sampling. The census targeted the 44 banking institution with data from 34 institutions used in the final analysis, focusing on aspects of CAMELS as indicated in previous chapter.

3.4 Data Collection

This study utilised secondary data obtained from the Central Bank of Kenya reports, commercial banks websites and annual reports of the commercial banks official. The data consisted of three financial years' observations between 2011 and 2013. The analysis was used to address the study objectives. The data was collected using data collection sheet, which were edited and coded.

3.5 Data Analysis

Descriptive and inferential statistics were used to analyse data. Frequencies, mean, mode and percentages were be used for descriptive statistics. The researcher used four levels in the measurement of the mobile banking data points to define the ratios including low (lesser than 0.01), moderate (between 0.01 and 0.03), high (between 0.04 and 0.06) and very high (above 0.06). Besides this, the researcher also used multiple linear regression. The regression analysis is defined as a type of analysis used when researcher is interested in finding out whether an independent variable predicts a given dependent variable as indicated by Mugenda and Mugenda (1999) and Kombo and Tromp (2009). The regression analysis was carried out to determine the

relationship between dependent variable (return on assets) and independent variables (perceived credibility, amounts, number of transactions, value, nature of transaction and security).

3.5.1 The Analytical Model

The analytical model is designed to provide a foundation for data analysis. In addition to providing an indication of the relationship between dependent and independent variable, this model offers a summary of the data analysis. The independent variables are outlined as X_1 (Volume of deposits and withdrawals in terms of shillings), X_2 (value of loan uptake in terms of shillings) X_3, (number of payment of utilities made through mobile banking), X_4 (number of statement requests) and X_5 (number of fund transfers through mobile banking). The linear regression model to be used is as indicated here under in equation 1.

$$Y=B_o+B_1X_1+B_2X_2+B_3X_3+B_4X_4+B_5X_5+B_6X_6E+B_7X_7$$ ……..equation 1

Where:

Y is the financial performance of the commercial banks in terms of return on assets (ROA)

Bo is constant,

X -is services offered through mobile banking. Mobile banking will be measured using 5 data points;

X_1 -is the ratio of volume of deposits through mobile banking to total deposits,

X_2 -is the ratio of loans uptake through mobile banking to the total loans issued by commercial banks.

X_3 -is the ratio of charges derived from payments of utilities to total non-interest income charges,

X_4 -Is the ratio of charges derived from statements requests to total non-interest income charges,

X_5 -funds transfers through mobile banking to total amounts transferred by commercial banks,

The moderating factors to be used include the following

X_6 Size of the bank

E- is the error term,

B_1 to B_7 is the coefficient of X_1 to X_7 respectively.

Statistical package for social sciences (SPSS version 21 was used to aid in quantitative data analysis in this study. Results were presented in form of tables, figures, charts and graphs. To test for the strength of the model and the effects of mobile banking on the financial performance of commercial banks in Kenya, the researcher conducted an Analysis of Variance (ANOVA). Validity tests were carried out through t-tests.

CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS

4.1 Introduction

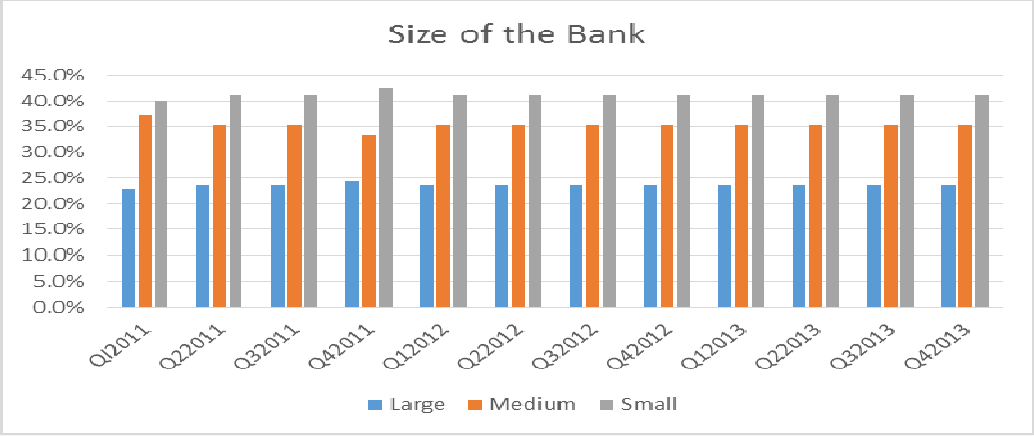
In this chapter, analysis will be performed on the data collected. Data on 34 of the 44 of the commercial banking institution was collected during the data collection process. The analysis will be performed in two phases, including descriptive statistics and validity testing.

4.2 Descriptive Data Analysis

4.2.1 Size of the Bank

The commercial banks analysed were classified into three categories, including large, medium and small. 23.5% of the banking institutions were determined to be large, 35.3% as medium, while the remaining 41.2% were rated as small. The determination of the size was based on the number of the account, as indicated in figure 1 here under and appendix 1. Although minor changes were experienced on the size of the banking institutions over the period, these changes did not have significant effect on the outcomes of the study.

Figure 1: Size of the bank



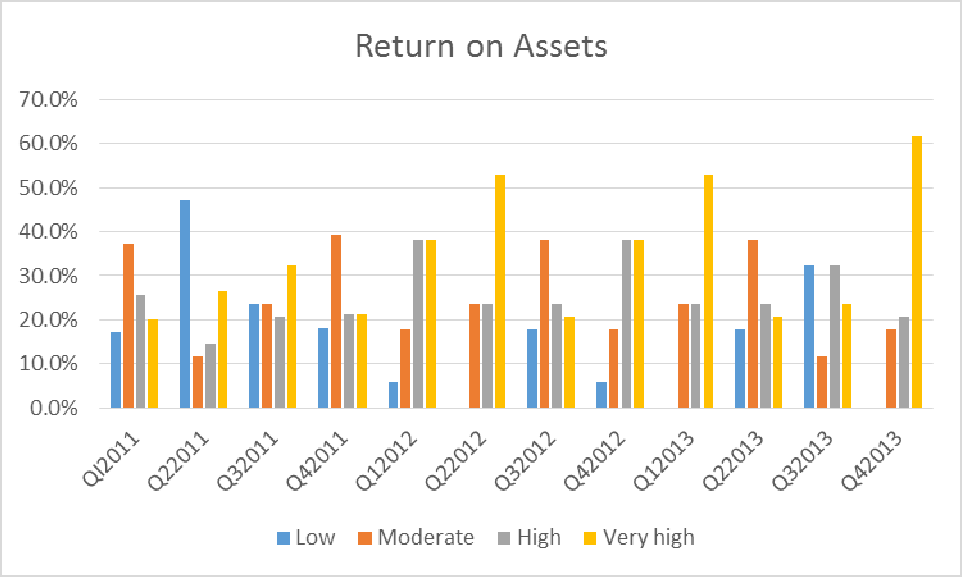
Source: Research Findings (2014)

4.2.2 Return on Assets (ROA)

The return on asset was a measure of the performance of the banking institutions over the period running from 2011 to 2013. From the results, it is clear that the ROA ranged from low to very high, with these parameters representing ROAs of less than 1% (low), 1-3% (moderate), 4-6% (high) and higher that 6% (very high). From the following figure, it is clear that there was a considerable increase in the ROA of the banking institution over the period. From the figure, there is a higher proportion of banking institutions reporting low levels of ROA in the beginning of the period as compared to the end of the period. On the contrary, the number of institutions reporting high levels of ROA increases over the period, assessing from Q12011 to Q42013.

Appendix 2 (which is a tabular form of the result) indicates that in Q12011, 17.1% of the banking institutions reported a ROA of under 1%, 37.1% reported ROA of between 1% and 03%, 25.7% reported an ROA of between 4% and 6%, while the remaining 20% reported ROA of higher than 6%. In Q42013, the results were completely different, with none of the banking institutions reporting ROAs below 1%. 17.6% of the banking institutions reported a ROA of the 'moderate' category (1% and 3%) increased to 20.6%. Over 61.8% of the institutions reported a ROA classified as 'very high', which was more than 6%. The gradual increase in the number of institutions reporting higher levels of ROA and a reduction in the number of institutions reporting low levels of ROA over the period represents an increase in the performance of the banking instructions over the period.

Figure 2: Return on Assets (ROA)

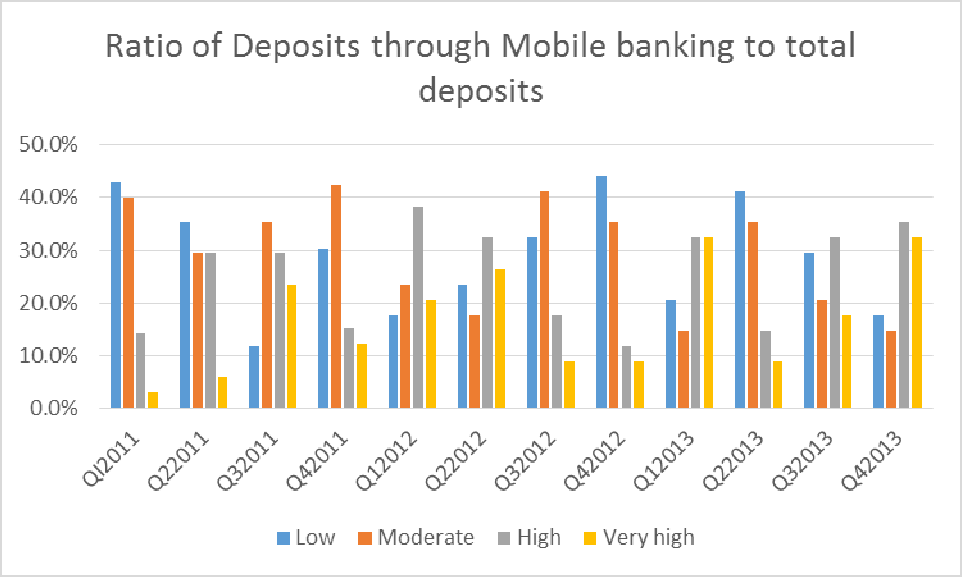


Source: Research Findings (2014)

4.2.3 Ratio of Deposits through Mobile Banking To Total Deposits

Over the period during which the study was performed, the ratio of deposits through mobile banking to the total deposits (deposit ratio) to the banking institution increased proportionately, as represented by the changes across the measured levels. From the figure here under, it is apparent that there is a gradual reduction in the number of banking institutions reporting 'low' levels of deposit ratio to 'very high' deposit ratios. The number of banking institutions reporting deposit ratios of lesser than 1% in Q12011 was 43%, while in Q4 2013, only 20% of the institutions reported such a level in the deposit ratio. On the contrary, the number of institutions reporting 'very high' levels in the deposit ratio changed from 5% in Q12011 to 36% in Q42013. Other changes in the ratio deposits ratio are indicated in the following graph, with supporting figure 3 here under and in Appendix 3.

Figure 3: Ratio of Deposits through Mobile banking to Total Deposits

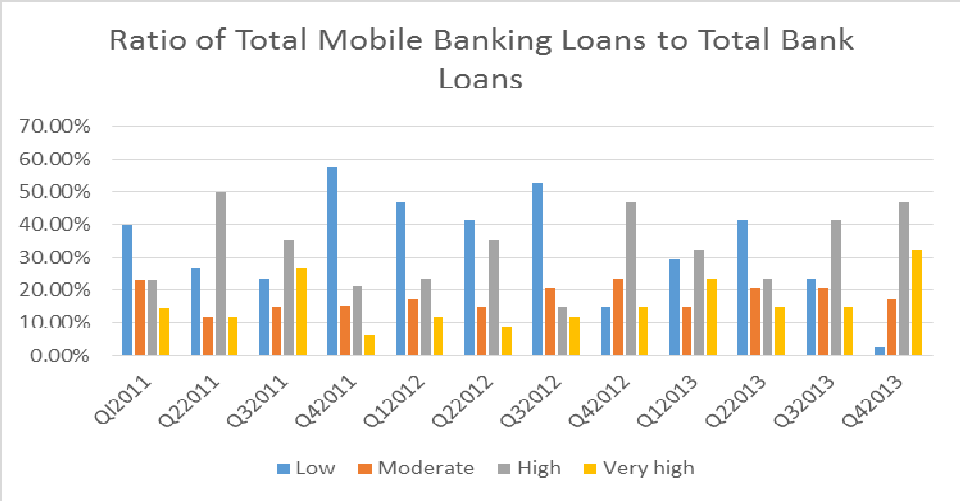


Source: Research Findings (2014)

4.2.4 Ratio of Total Mobile Banking Loans to Total Bank Loans

Results measuring the ratio of total mobile banking loans to the total banking loans are discussed in this chapter. As indicated in figure 4 below and appendix 4, there was a gradual change in the volume of loans acquired through mobile phones over the period. This change is represented by two factors. First, there is a gradual decline in the number of banking institutions reporting 'low' levels in the ratio of total mobile banking loans between Q12011 (40%) and Q42014 (2.9%). At the same time, the number of institutions reporting 'very high' level in the ratio of mobile banking to total loans ratio over the period increased from 14.3% in Q12011 to 32.4% in Q42013. Although significant changes in this ratio occurred during the period analyzed, it is clear that there was a positive generally.

Figure 4: Ratio of Total Mobile Banking Loans to the Total bank Loans

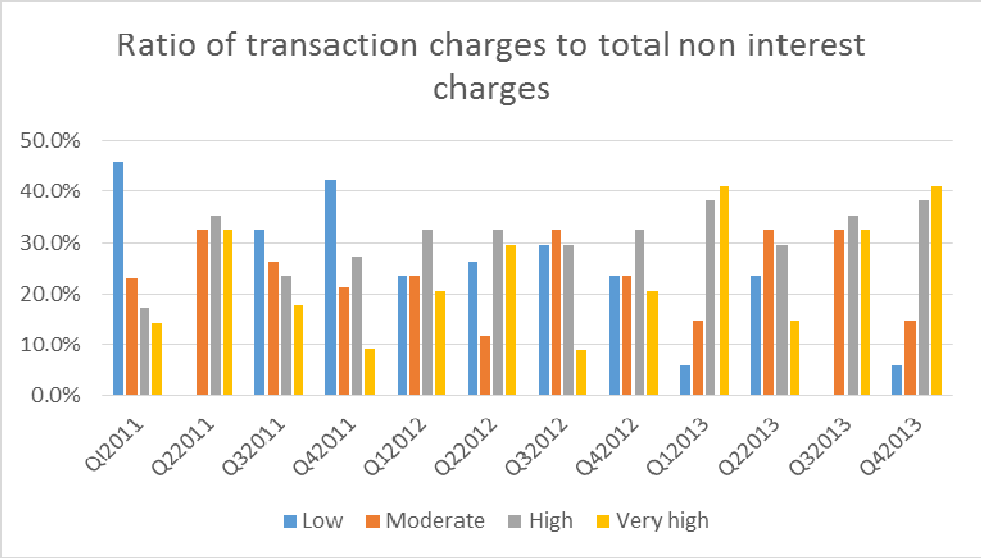


Source: Research Findings (2014)

4.2.5 Ratio of Transaction Charges on Balance Inquiries to Total Non-Interest Charges

The ratio of transaction charges on statement and balance inquiries to the total non-interest charges was measured and interpreted in this segment. The results are presented in the following figure and the table in appendix 5. From the results, it is clear that there was a moderate increase in the performance of the banking institutions, measured through this data point. The increase in the ratio of transaction charges from statement and balance requests to the total non-interest income is represented by a decline in the number of institutions reporting ratios of lesser that 1% in Q12011 (45.7%) to 5.9% in Q42013. Although the change is not linear, there was a significant drop in this aspect. On the same note, the number of institutions reporting ratios of more than 6% changed from 14.3% in Q12011 to 41.2% in Q42013. Related changes were reported across the moderate (1%-3%) and high (0.04-0.06) categories in the ratio of transaction charges for statement and balance requests.

Figure 5: Ratio of Transaction Charges from Statement requests to the Total Non-Interest Charges

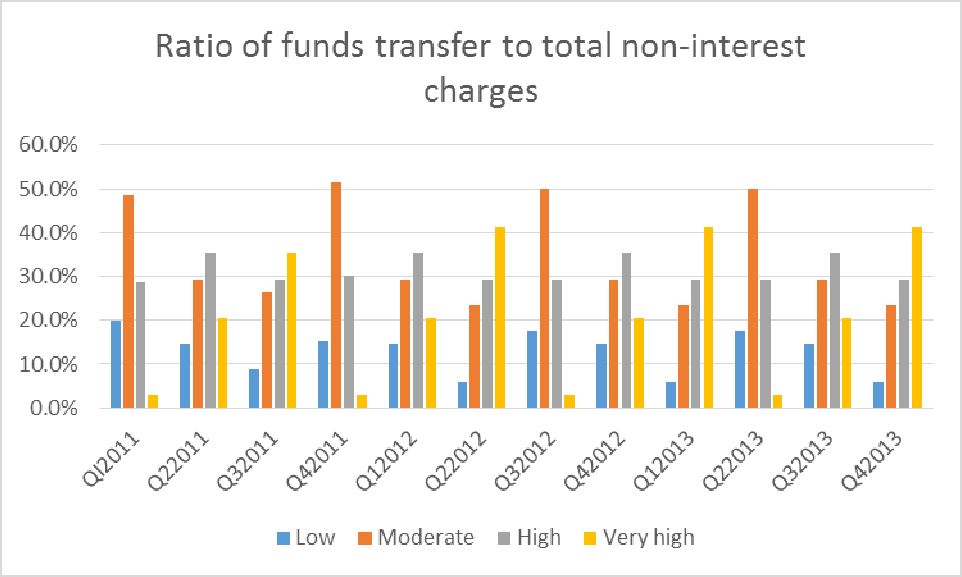


Source: Research Findings (2014)

4.2.6 Ratio of M-Banking Funds Transfer Charges to the Total Non-Interest Charges

The ratio of the charges originating from funds transfer charges through mobile banking to the total non-interest charges was measured in this section. The analysis reveals that although there was measurable change over the period, the change was not significant at all. The number of banking institutions reporting a 'low' level in the ratio of funds transfer charges to the total non-interest charges in Q12011 was 19% compared to 5% in Q4 2013. Changes in the moderate and high level ratios of funds transfer charges to the total non-interest charges were over the year were similar. However, there was a change in the number of institutions reporting 'very high' results in the ratio of funds transfer charges to total non-interest charges over the period, represented by the increase from 2.9% in Q12011 to 21.1% in q4 2013. The results are indicated in figure below, and appendix 6.

Figure 6: ratio of Funds Transfer Charges to Total Non-Interest Charges

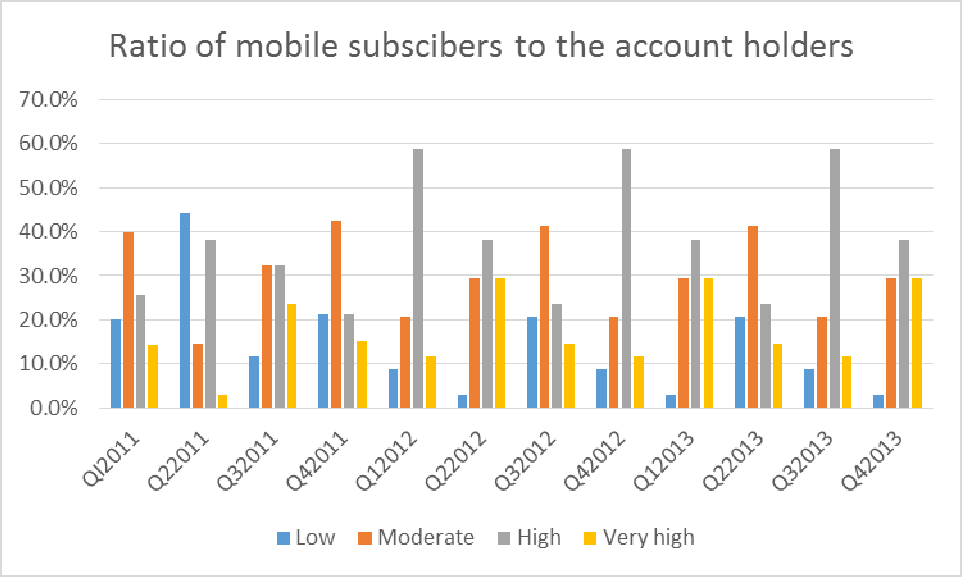


Source: Research Findings (2014)

4.2.7 Ratio of Mobile Banking Subscribers to the Total Number of Account Holders

The ratio of mobile banking subscribers to the total number of account holders changed positively over the period under analysis. In addition to changes in the numbers, there was an increase in the number of banking institutions reporting higher ratios over the period, and reduction in the institutions reporting low rations. From the graph, there is a gradual decrease in the number of institutions reporting low ratios of mobile banking subscribers to total account holders from 20% in Q12011 to 2.9% in Q42013. A considerable growth in the number of institutions reporting a high level in the ratio of mobile banking subscribers to total account holders from 25% in Q12011 to 35% in Q42013 was also recorded. Lastly, the number of banking institutions reporting a very high ratio of mobile banking subscribers to account holders increased from 14.3% in Q12011 to 31% in Q42013. The results are presented in figure below and appendix 7.

Figure 7: Ratio of Total Mobile Banking Subscribers to Total Account Holders



Source: Research Findings (2014)

4.3 Regression Analysis

Regression analysis and ANOVA were performed to determine the significance of the effects of mobile banking on the performance of banking institution. The ANOVA tests are aimed at determining of the effects were significant on the overall performance of the banking institutions over the same period. The model summary is indicated here under in Table 1. The seven independent variables only influenced 12% of the ROA of the banking institutions during the period of analysis. This indicates a weak positive correlation between the performance of the banking institution and mobile banking.

Table 1: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.346[a]	.120	.105	1.02075

a. Predictors: (Constant), Ratio of mobile subscribers to the account holders , Ratio of total mobile banking loans to total bank loans, Size of the Bank, Ratio of transaction charges for statement requests and non-interest charges, Ratio of Deposits through mobile banking to total deposits, Ratio of funds transfer to total non-interest charges , Ratio of transaction charges to total non-interest charges

Source: Research Findings (2014)

At a probability level of F=7.790, p<0.05, the regression analysis indicates that the independent variables were significant predictors of the dependent variable, as indicated in Table 2, here under. As a result, mobile banking was a significant predictor of the performance of the commercial banks in Kenya.

Table 2: ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56.815	7	8.116	7.790	.000[b]
	Residual	416.771	400	1.042		
	Total	473.586	407			

a. Dependent Variable: Return on Asset

b. Predictors: (Constant), Ratio of mobile subscribers to the account holders , Ratio of total mobile banking loans to total bank loans, Size of the Bank, Ratio of transaction charges for statement requests and non-interest charges, Ratio of Deposits through mobile banking to total deposits, Ratio of funds transfer to total non-interest charges , Ratio of transaction charges to total non-interest charges

Source: Research Findings (2014).

Regression analysis conducted using the data was analysed to determine the relationship between the performance of the commercial banks in Kenya and mobile banking across the seven data points. The regression equation used was as indicated in chapter 3, section 3.5.1 ($Y=B_o+B_1X_1+B_2X_2+B_3X_3+B_4X_4+B_5X_5+B_6X_6+B_7X_7$).

Where

Y is the financial performance of the commercial banks in terms of return on assets (ROA)
Bo is constant,
X -is services offered through mobile banking. Mobile banking will be measured using 5 data points;

X_1 -is the ratio of volume of deposits through mobile banking to total deposits,

X_2 -is the ratio of loans uptake through mobile banking to the total loans issued by commercial banks.

X_3 -is the ratio of charges derived from payments of utilities to total non-interest income charges,

X_4 -Is the ratio of charges derived from statements requests to total non-interest income charges,

X_5 -funds transfers through mobile banking to total amounts transferred by commercial banks,

The moderating factors to be used include the following

X_6 Size of the bank

X_7 Ratio of Mobile banking subscribers to the total number of account holders

E- is the error term,

B_1 to B_7 is the coefficient of X_1 to X_7 respectively.

Table 3: Regression Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.290	.278		4.640	.000
	Size of the Bank	.033	.065	.024	.508	.612
	Ratio of Deposits through mobile banking to total deposits	.187	.050	.184	3.743	.000
	Ratio of total mobile banking loans to total bank loans	.114	.047	.116	2.427	.016
	Ratio of transaction charges to total non-interest charges	-.062	.049	-.062	-1.261	.208
	Ratio of funds transfer to total non-interest charges	.007	.055	.006	.119	.905
	Ratio of transaction charges for statement requests and non-interest charges	.218	.047	.223	4.677	.000
	Ratio of mobile subscribers to the account holders	.114	.055	.099	2.074	.039

a. Dependent Variable: Return on Asset

Source: Research Findings (2014).

According to the regression results here under, the analytical model for the regression can be indicated as:

$$ROA=1.29+0.187X_1+0.114X_2-0.062X_3+0.218X_4+0.007X_5+0.033X_6+0.114X_7\ldots\ldots\text{Eqn 2}$$

As indicated by the model, assuming that all mobile banking data points were constant at zero, the ROA of the banking institutions will be 1.29%. Taking all other factors constant, a unitary increase in ratio size ratio of volume of deposits through mobile banking to total deposits will cause a 0.187% change in the ROA. A similar unitary change in the ratio of loans uptake through mobile banking to the total loans issued by commercial banks will result to a 0.11% change in the ROA of the banking institution. With regard to the ratio of charges derived from payments of utilities to total non-interest income charges a unitary change will have a corresponding inverse change of 0.062% in the ROA.

Furthermore, a one unit change in the ratio of charges derived from statements requests to total non-interest income charges will result to a commensurate 0.007% change in the ROA of the banking institutions in the country. Finally, a one unit change in the ratio of funds transfers through mobile banking to total amounts transferred by commercial banks will be responsible for a 0.033% change in the ROA of the banking institution.

Further correlation tests indicated that the ratio of deposits through mobile banking loan to total loans was statistically significant in predicting ROA of the banking institutions, considering a t-statistic of $t=3.743$ ($p<0.05$). The ratio of mobile banking loans to total bank loans was also a statistically significant predictor of the ROA at a t-statistic of 2.427 ($p<0.05$). Statistical significance was also established between ROA and the ratio of transaction charges for statement and balance requests and total-non-interest charges at $t=4.677$ ($p<0.05$). Finally, the ratio of mobile banking subscribers to the number of account holders was a statistically significant predictor of the performance of banking institutions with a t-statistic of 2.074 ($p<0.05$).

There was no statistical significance between the performance of the banking institutions and the ratio of funds transfer and total non-interest charges, with a t-statistic of 0.019 ($p>0.05$). A similar result was obtained between the ratio of total transaction charges from payment of utilities and the performance of the banking institution, with a $t=-1.261$ ($p>0.05$). Lastly, there was lack of statistical significance between the performance of the banking institutions and the size of the banks, with a $t=0.508$ ($p>0.05$).

4.4 Correlation Analysis

The correlation analysis was performed to determine the level of dependence in the statistical relationship between the return on assets over the three years with the data points for the effects mobile banking on the commercial banks. The correlation was computed through Pearson's product moment approach. The results are indicated in appendix 8. The Pearson's product-moment correlation tests performed to determine the relationship between the return on asset in from data points for mobile banking.

The Pearson's product-moment correlation tests indicated a statistically insignificant weak negative correlation between the performance of banks in Kenya and the ratio of mobile banking loans to the total loans ($r= -0.005$, $N=408$, $p>0.05$). There was a statistically insignificant weak positive correlation between the ROA and: the mobile banking deposits ($r= 0.031$, $N=408$, $p >0.050$, ratio of transaction charges to the total non-interest charges ($r= 0.059$, $N=408$, $p>0.05$), ratio of transaction charges for statement requests to the total non-interest charges ($r= 0.067$, $N=408$, $p>0.05$) and the ratio of mobile banking subscribers to the total number of account holders ($r= 0.073$, $N=408$, $p>0.05$). A statistically significant weak positive correlation existed between the ROA and: ratio of funds transfer charges and the total non-interest charges ($r= 0.115$, $N=408$, $p<0.05$). The regression results are indicated here under.

4.5 Discussion of Findings

The findings from this study are the foundation for determination of the effects of mobile banking on the performance of the commercial banking instructions in the Kenya. Data from 34 banking institutions was used on the analysis. Analysis was performed through descriptive and

regression statistics and presented in a tabular manner. The descriptive statistics indicated an increase across all data points, represented by two phenomena. First, there was a reduction in the number of banking institutions reporting low ratios for the seven data points as well as the performance of the banking institutions over the period under analysis. In addition, there was an increase in the number of banking institutions reporting high and very high ratios across the variables measured. The increase in number of banking institutions reporting high and very high ratios for the variables indicated growth in the measures of performance commensurate to the measures for improvement in mobile banking. On the same note, ANOVA results indicated statistical significance in the ability of mobile banking to act as a predictor for the changes in the ROA over the period. Regression analysis indicated that only 1.29% of the ROA was attributable to factors other than mobile banking. Further analysis of the correlation coefficients indicated their commensurate effects on the ROA, holding other variables constant in the period.

These results were commensurate to the findings by past researchers including Ndungu (2013), Durkin and Howcroft (2003) and Brown et al. (2003). These studies proposed that mobile banking had a positive effect on the performance of banking institutions, through both perceived and actual effects. The findings in this study however conflict the findings by AKI (2002), which pointed out that new technologies cannot replace network banking. However, they provide an alternative approach to enhancing banking as a service provided by the banking institution, and enhancing the efficiency and effectiveness of the service packages by the banking institutions. Although the mobile banking did not reveal a statistically significant relationship with the performance of the banking institution, mobile banking represents a form of technological inclusion in the service category of banking institutions.

As a result, as pointed out by the proponents of the TTF theory, it possible for substitution of certain tasks with technologically advanced options. In relation to the performance of banking, an increase in the ratios indicated in the mobile banking data points does not imply changes in the sub-parameters of ROA, but could represent substitution of the avenue of service consumption. In some instances, banking customers adopt mobile banking, which does not rule out the entry of new customers.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this chapter, conclusions and recommendations will be formulated based on the findings and analysis of the data in the previous sections. Conclusions will be based on the research questions and objective, as well as the inferences drawn from the literature review. The methodology used for analysis of the data from the 34 banking institutions is ANOVA.

5.2 Summary of Findings

This study focused on determining the effects of mobile banking on the commercial banks in the country. A total of 44 banking institutions were surveyed, with data from 34 institutions used in the analysis section. The analysis focused on determining the descriptive aspects of mobile banking across seven data points. Analysis was indicated across the seven data points, measured over a three year period starting 2011. The findings were classified as descriptive, regression and correlation analysis. Descriptive statistics indicated that there was a growth in the adoption of mobile banking across all aspects in the years under analysis. Growth in the utilisation of mobile phone banking is represented by changes in the measured ratios of the data points. Changes in the mobile banking data points are measured across four ranges, from lowest to highest (low to very high) indicating the features of the ratios in the variables.

This is assessed in relation to the number of institutions that reported these levels of performance of mobile banking. As indicated, a decrease in the number of institutions reporting lower levels of the ratios and an increase in the number of institutions reporting higher ratios indicates a positive change in the performance of the banking institutions and increase in mobile banking

across the data points. The four levels assigned to the ratios are low (lesser than 0.01), moderate (0.01-0.03), high (0.04-0.06) and high (higher than 0.06).

As a result, an increase in the number of banking institutions reporting higher ratios indicates that mobile banking has a positive effect on the performance of the banking institution. Consequently, an increase in the number of higher ratios reported and the number of banking institutions reporting such higher ratios indicates that the effect of mobile banking has increased across the data points including loans uptake through mobile banking, deposits and withdrawals through mobile banking, funds transfer charges, statement request charges for mobile banking and transaction charges for payment of services and bills through mobile banking.

ANOVA tests indicated that the mobile banking was a significant predictor. The results also indicated that holding the effects of mobile banking on performance constant, the ROA of the commercial banks was pegged at 1.29%. Further tests indicated the 4 out of the 7 variable were statistically significant predictors of the effects of mobile banking on the performance of commercial banks. Correlation analysis (R) drawn from the regression statistics indicated a weak positive correlation in the year, with statistical significance in only one of the variable.

5.3 Conclusion

Mobile banking is an innovative product which has risen to prominence in the global banking industry. Although mobile banking has not managed to overshadow the imperativeness of traditional banking, most institutions have found it necessary to inculcate elements of mobile banking in their service categories. In addition to strategic reasons, theoretical foundations highly support the implementation of mobile banking.

As discussed in the literature review, the task technology fit (TTF) theory, Schumpeterian theory of innovation and market power and efficiency structure theories support the implementation mobile banking in commercial banking. According to the proponents of TTF theory, the adoption of technological advances is highly dependent on the suitability of the specific technology. Accordingly, developers of mobile banking platforms have designed products and features which meet the expectations of the consumers of banking services. The proponents of market power and efficiency structure theory also direct that growth in market power is founded on the ability of an institution to provide services which are superior. The Schumpeterian theory aligns innovation with competitive advantage.

Findings from the study indicated that mobile banking influenced the performance of the banking institutions across all data points. This was observed through the observed changes in the ratios used to measure the changes in the variables used in the study. Statistical tests of significance however indicated that the changes were not significant in across the period analysed. Subsequently, the study establishes that mobile banking has a positive effect on the performance of the banking institutions as indicated in the descriptive statistics. The increase in the use of mobile banking is also established in this study. .

5.4 Recommendations

Findings from the study indicate that mobile banking has positive effect on the performance of the commercial banking institutions measured by ROA. However, the effect of mobile banking on the performance of the commercial did not reveal any statistical significance. The recommendations from this study are as indicated here under.

Enhancement of mobile banking services to the end-consumers. Although mobile banking provides a highly efficient approach to banking, adoption of mobile banking has not taken root in the country. As a result, banks have to provide customers with a multiplicity of alternatives and options under the mobile banking umbrella of services in order to enhance its attractiveness and efficiency.

Promotion of mobile banking: Mobile banking has taken root in some aspects of commercial banking in the country. However, due to the perceived shortfalls by the customers, most individuals only use it at a micro-level. The option is shunned when individuals are handling large transactions. As a result, the actual and perceived lack of trust in the reliability of mobile has resulted to the low volumes of transactions compared to the traditional banking avenues.

-Enhance the suitability and acceptance of mobile banking to the retail sector in the country. By promoting the acceptance of mobile banking as an avenue through financial services can be delivered, it will become easier for consumers to commensurate with consumption of such services. Although this is a slow process, it will provide significance of mobile banking to the overall performance of the commercial banking sector in the country.

5.5 Limitations of the Study

Although the study successfully achieved its objectives, the following limitations were apparent. First, the period under which the study was carried was limited to a small range. A longer period should have been considered, in order to accommodate changes in the ROA of the banking institutions during a period when the consumption of mobile banking changed significantly.

It is also recognizable that there were no outstanding changes in mobile banking over the period under analysis, which could account to the nature of the results.

5.6 Suggestions for Further Studies

Further studies should be undertaken to determine the effects of mobile banking on the performance of commercial banks in the country, depending on their consumption of mobile banking. Considering that some banking institutions are still implementing mobile banking, the research should focus on length of period that the bank has engaged in mobile banking. This will provide a more refined picture and eliminate the blanket effect, and make it possible to focus on banking institutions which have developed tangible products for mobile banking.

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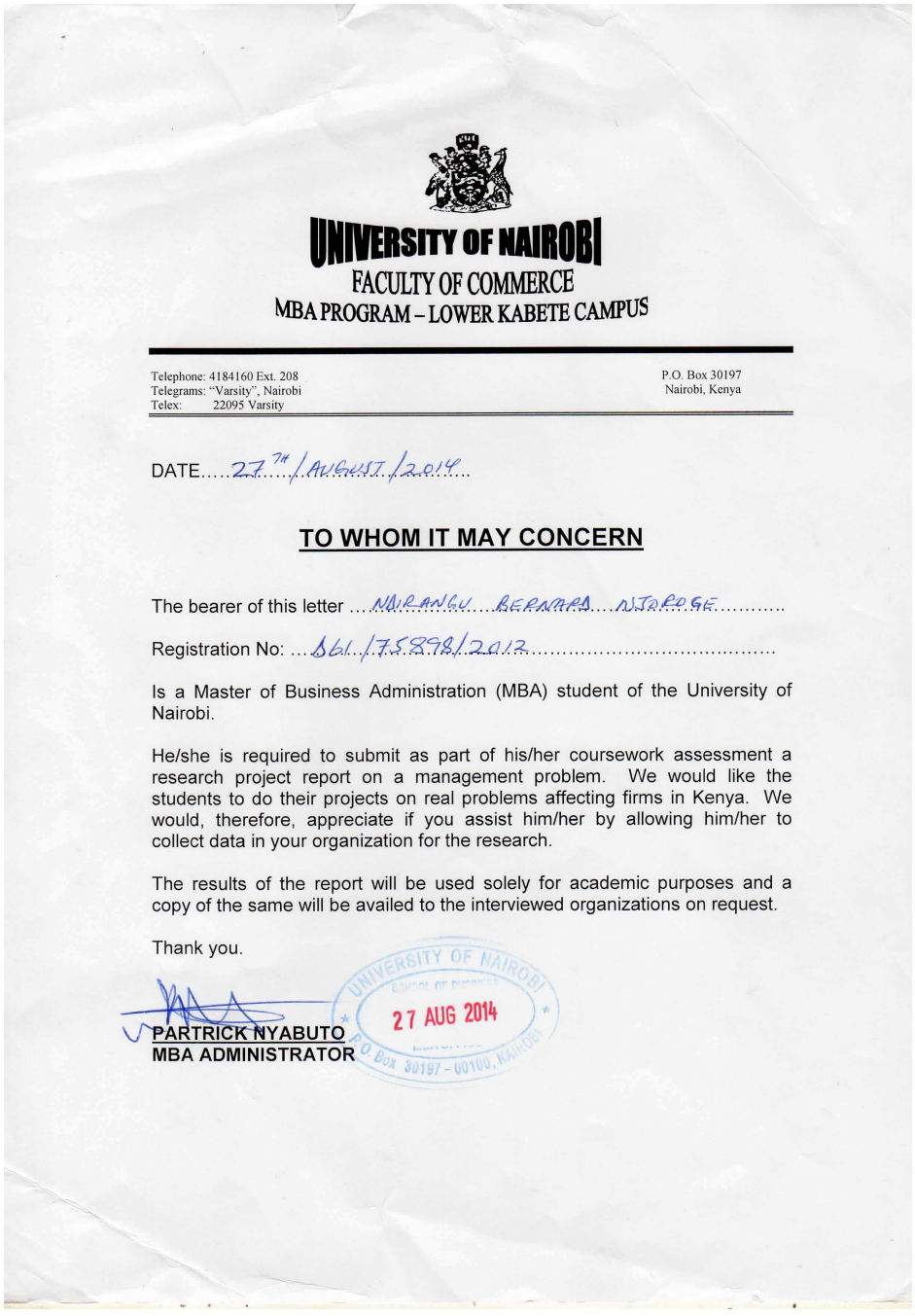
APPENDICES

Appendix 1: Letter of Introduction



UNIVERSITY OF NAIROBI
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Nairobi, Kenya

DATE.....27TH/AUGUST/2014...

TO WHOM IT MAY CONCERN

The bearer of this letter ...MWANGI...BERNARD...NJOROGE.....

Registration No: ...D61/75898/2012.....

Is a Master of Business Administration (MBA) student of the University of Nairobi.

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 if you assist him/her by allowing him/her to collect data in your organization for the research.

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.

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
27 AUG 2014
P.O. Box 30197 – 00100, NAIROBI

PARTRICK NYABUTO
MBA ADMINISTRATOR

Appendix 2: Size of the Bank

-Size of the Bank

% within Quarter

		Quarter												Total
		QI2011	Q22011	Q32011	Q42011	Q12012	Q22012	Q32012	Q42012	Q12013	Q22013	Q32013	Q42013	
Size of the Bank	Large	22.9%	23.5%	23.5%	24.2%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%	23.5%
	Medium	37.1%	35.3%	35.3%	33.3%	35.3%	35.3%	35.3%	35.3%	35.3%	35.3%	35.3%	35.3%	35.3%
	Small	40.0%	41.2%	41.2%	42.4%	41.2%	41.2%	41.2%	41.2%	41.2%	41.2%	41.2%	41.2%	41.2%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Research Findings (2014)

Appendix 3: Return on Assets

Return on Asset

% within Quarter

		Quarter												Total
		QI2011	Q22011	Q32011	Q42011	Q12012	Q22012	Q32012	Q42012	Q12013	Q22013	Q32013	Q42013	
Return on Asset	Low	17.1%	47.1%	23.5%	18.2%	5.9%		17.6%	5.9%		17.6%	32.4%		15.4%
	Moderate	37.1%	11.8%	23.5%	39.4%	17.6%	23.5%	38.2%	17.6%	23.5%	38.2%	11.8%	17.6%	25.0%
	High	25.7%	14.7%	20.6%	21.2%	38.2%	23.5%	23.5%	38.2%	23.5%	23.5%	32.4%	20.6%	25.5%
	Very high	20.0%	26.5%	32.4%	21.2%	38.2%	52.9%	20.6%	38.2%	52.9%	20.6%	23.5%	61.8%	34.1%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Research Findings (2014)

Appendix 4: Ratio of Deposits through Mobile Banking To Total Deposits

Ratio of Deposits through mobile banking to total deposits

% within Quarter

		Quarter												Total
		QI2011	Q22011	Q32011	Q42011	Q12012	Q22012	Q32012	Q42012	Q12013	Q22013	Q32013	Q42013	
Ratio of Deposits through mobile banking to total deposits	Low	42.9%	35.3%	11.8%	30.3%	17.6%	23.5%	32.4%	44.1%	20.6%	41.2%	29.4%	17.6%	28.9%
	Moderate	40.0%	29.4%	35.3%	42.4%	23.5%	17.6%	41.2%	35.3%	14.7%	35.3%	20.6%	14.7%	29.2%
	High	14.3%	29.4%	29.4%	15.2%	38.2%	32.4%	17.6%	11.8%	32.4%	14.7%	32.4%	35.3%	25.2%
	Very high	2.9%	5.9%	23.5%	12.1%	20.6%	26.5%	8.8%	8.8%	32.4%	8.8%	17.6%	32.4%	16.7%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Research Findings (2014)

Appendix 5: Ratio of Total Mobile Banking Loans to Total Bank Loans

Ratio of total mobile banking loans to total bank loans

% within Quarter

		Quarter												Total
		QI2011	Q22011	Q32011	Q42011	Q12012	Q22012	Q32012	Q42012	Q12013	Q22013	Q32013	Q42013	
Ratio of total mobile banking loans to total bank loans	Low	40.0%	26.5%	23.5%	57.6%	47.1%	41.2%	52.9%	14.7%	29.4%	41.2%	23.5%	2.9%	33.3%
	Moderate	22.9%	11.8%	14.7%	15.2%	17.6%	14.7%	20.6%	23.5%	14.7%	20.6%	20.6%	17.6%	17.9%
	High	22.9%	50.0%	35.3%	21.2%	23.5%	35.3%	14.7%	47.1%	32.4%	23.5%	41.2%	47.1%	32.8%
	Very high	14.3%	11.8%	26.5%	6.1%	11.8%	8.8%	11.8%	14.7%	23.5%	14.7%	14.7%	32.4%	15.9%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Research Findings (2014)

Appendix 6: Ratio of Transaction Charges on Balance Inquiries to Total Non-Interest Charges

Ratio of transaction charges for statement requests and non-interest charges

% within Quarter

		Quarter												Total
		QI2011	Q22011	Q32011	Q42011	Q12012	Q22012	Q32012	Q42012	Q12013	Q22013	Q32013	Q42013	
Ratio of transaction charges for statement requests	Low	22.9%	23.5%	14.7%	24.2%	23.5%	14.7%	23.5%	32.4%	14.7%	23.5%	23.5%	14.7%	21.3%
	Moderate	31.4%	11.8%	23.5%	33.3%	11.8%	20.6%	32.4%	11.8%	20.6%	32.4%	11.8%	20.6%	21.8%
	High	28.6%	41.2%	17.6%	30.3%	41.2%	17.6%	29.4%	38.2%	17.6%	29.4%	41.2%	17.6%	29.2%
	Very high	17.1%	23.5%	44.1%	12.1%	23.5%	47.1%	14.7%	17.6%	47.1%	14.7%	23.5%	47.1%	27.7%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Research Findings (2014)

Appendix 7: Ratio of M-Banking Funds Transfer Charges to the Total Non-Interest Charges

Ratio of funds transfer to total non-interest charges

% within Quarter

		Quarter												Total
		QI2011	Q22011	Q32011	Q42011	Q1201 2	Q22012	Q32012	Q42012	Q12013	Q22013	Q32013	Q42013	
Ratio of funds transfer to total non-interest charges	Low	20.0%	14.7%	8.8%	15.2%	14.7%	5.9%	17.6%	14.7%	5.9%	17.6%	14.7%	5.9%	13.0%
	Moderate	48.6%	29.4%	26.5%	51.5%	29.4%	23.5%	50.0%	29.4%	23.5%	50.0%	29.4%	23.5%	34.6%
	High	28.6%	35.3%	29.4%	30.3%	35.3%	29.4%	29.4%	35.3%	29.4%	29.4%	35.3%	29.4%	31.4%
	Very high	2.9%	20.6%	35.3%	3.0%	20.6%	41.2%	2.9%	20.6%	41.2%	2.9%	20.6%	41.2%	21.1%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Research Findings (2014)

Appendix 8: Ratio of Mobile Banking Subscribers to the Total Number of Account Holders

Ratio of mobile subscribers to the account holders

% within Quarter

		Quarter												Total
		QI2011	Q22011	Q32011	Q42011	Q12012	Q22012	Q32012	Q42012	Q12013	Q22013	Q32013	Q42013	
Ratio of mobile subscribers to the account holders	Low	20.0%	44.1%	11.8%	21.2%	8.8%	2.9%	20.6%	8.8%	2.9%	20.6%	8.8%	2.9%	14.5%
	Moderate	40.0%	14.7%	32.4%	42.4%	20.6%	29.4%	41.2%	20.6%	29.4%	41.2%	20.6%	29.4%	30.1%
	High	25.7%	38.2%	32.4%	21.2%	58.8%	38.2%	23.5%	58.8%	38.2%	23.5%	58.8%	38.2%	38.0%
	Very high	14.3%	2.9%	23.5%	15.2%	11.8%	29.4%	14.7%	11.8%	29.4%	14.7%	11.8%	29.4%	17.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Research Findings (2014)

Appendix 9: Correlation Analysis

		Size of the Bank	Return on Asset	Ratio of Deposits through mobile banking to total deposits	Ratio of total mobile banking loans to total bank loans	Ratio of transaction charges to total non-interest charges	Ratio of funds transfer to total non-interest charges	Ratio of transaction charges for statement requests and non-interest charges	Ratio of mobile subscribers to the account holders
Size of the Bank	Pearson Correlation	1	.048	.031	-.005	.059	.115*	.067	.073
	Sig. (2-tailed)		.329	.527	.927	.230	.020	.180	.140
	N	408	408	408	408	408	408	408	408
Return on Asset	Pearson Correlation	.048	1	.207**	.112*	.022	.087	.246**	.138**
	Sig. (2-tailed)	.329		.000	.024	.664	.078	.000	.005
	N	408	408	408	408	408	408	408	408
Ratio of Deposits through mobile banking to total deposits	Pearson Correlation	.031	.207**	1	.013	.222**	.159**	.085	.152**
	Sig. (2-tailed)	.527	.000		.797	.000	.001	.086	.002
	N	408	408	408	408	408	408	408	408
Ratio of total mobile banking loans to total bank loans	Pearson Correlation	-.005	.112*	.013	1	.133**	.136**	.018	-.030
	Sig. (2-tailed)	.927	.024	.797		.007	.006	.711	.543
	N	408	408	408	408	408	408	408	408
Ratio of transaction charges to total non-interest charges	Pearson Correlation	.059	.022	.222**	.133**	1	.088	.072	.090
	Sig. (2-tailed)	.230	.664	.000	.007		.077	.148	.070
	N	408	408	408	408	408	408	408	408
Ratio of funds transfer to total non-interest charges	Pearson Correlation	.115*	.087	.159**	.136**	.088	1	.136**	.090
	Sig. (2-tailed)	.020	.078	.001	.006	.077		.006	.071
	N	408	408	408	408	408	408	408	408
Ratio of transaction charges for statement requests and non-interest charges	Pearson Correlation	.067	.246**	.085	.018	.072	.136**	1	.079
	Sig. (2-tailed)	.180	.000	.086	.711	.148	.006		.109
	N	408	408	408	408	408	408	408	408
Ratio of mobile subscribers to the account holders	Pearson Correlation	.073	.138**	.152**	-.030	.090	.090	.079	1
	Sig. (2-tailed)	.140	.005	.002	.543	.070	.071	.109	
	N	408	408	408	408	408	408	408	408

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

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

Source: Research Findings (2014)