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

BY

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DECLARATION

This Research Project is my original work and has not been presented in any other University.

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This Research Project has been submitted for presentation with my approval as University Supervisor.

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DEDICATION

I dedicate this research project to God Almighty for the gift of life and my family for their Love and encouragement.

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To all, I remain forever grateful

ABSTRACT

The banking sector in Kenya has experienced turbulent times following the collapse of many banks in the 1990s. In order to minimize their operational costs, commercial banks have adopted internet banking including ATMs, mobile banking and internet banking where customer can access their accounts on their personal computers. Mobile banking offers millions of people a potential solution in emerging markets that have access to a cell phone, yet remain excluded from the financial mainstream. It can make basic financial services more accessible by minimizing time and distance to the nearest retail bank branches as well as reducing the bank's own overheads and transaction- related costs. The objective of this study was to determine the effect of mobile banking on the financial performance of commercial banks in Kenya

The study applied descriptive research design. The target population included six mobile phone service providers who provide mobile phone services and 43 commercial banks operating in Kenya as at December 2012. The total amounts transferred via the mobile for the past five years were collected and the number of mobile banking users was regressed against bank performance as measured by the return on assets. The study used secondary data from the Central bank of Kenya, Mobile phone Companies and Kenya National Bureau of Statistics.

During the study period, the amount of money transacted through the mobile money transfers increased steadily from 0.06 billion in 2007 on its launch to 118.08 billion by the last month of the analysis. The growth was motivated by the convenience offered by the service. The study however found that there exist a weak positive relationship between mobile banking and the financial performance of commercial banks in Kenya. The study recommends that the policy makers take mobile banking awareness creation into consideration when drafting policies on the operations of banks in Kenya. This was because of the indirect relationship of mobile banking and financial performance especially as the industry moves into a technologically competitive environment. The study also recommends that policy makers keep a keen eye on the developments of mobile banking as it is a new platform for competition among commercial banks as the world moves into a digital age to ensure it does not lose its regulatory role.

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LIST OF ABBREVIATIONS

ATMs	Automated Teller Machines
CBK	Central Bank of Kenya
CRBs	Credit Reference Bureaus
E-banking	Internet Banking
ES	Efficiency Structure
ICT	Information Communication and Technology
KCB	Kenya Commercial Bank Limited
M-banking	Mobile banking
MFC	Mortgage Finance Company
NIM	Net Interest Margin
PEX	Palestine Securities Exchange
ROA	Return on Assets
ROE	Return on Equity
SMEs	Small Medium Enterprises
SMS	Short message services
SSA	Sub-Saharan Africa
TAM	Technology Acceptance Model
U.K.	United Kingdom

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CHAPTER ONE

INTRODUCTION

1.1 Background of study

Mobile banking (m-banking) is a term used for performing banking transactions via mobile device such as mobile phones (Anyasi and Otubu, 2009). Tiwari, Buse and Herstatt (2006) define mobile banking as any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer- mediated networks with the help of an electronic device. They further indicate that mobile banking refers to provision and availment of bank-related financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions, to administer accounts and to access customized information from the bank. Mobile banking is most often performed via short message services (SMS) or mobile internet, but can also be used by special programs called clients downloaded to the mobile device.

Over the past few years, advancement in information technology has changed the way organizations operate and conduct their business (Al-Jabri, 2012). Technological advancement has brought about the evolution of m-banking and online banking in the banking industry which has revolutionized the manner in which commercial banks conduct their business. Internet and m-banking has not only made financial organization provide banking services online and via mobile but has also provided customer with easy access to financial services and other benefits.

The movement from traditional branch banking to mobile banking has caused banks to come up with strategies to attract more customers and retain existing ones. The desire to reduce both operational, administrative cost and competition has driven banks to adopt mobile banking. However cost reduction is only realizable with an increase in customer adoption (Bradley and Stewart, 2003).

Technological advancements in the area of telecommunications and information technology have continued to revolutionize the banking industry. The delivery of financial services has experienced major changes during the past few years. A feature of the banking industry across the globe has been that it is increasingly becoming turbulent and competitive thereby forcing commercial banks to innovate for survival. Banks, aided by technological developments, have responded to the challenges by adopting new strategies which emphasize on attempting to build customer satisfaction through offering better products and services and at the same time to minimize operation costs (Sohail & Shanmugham, 2003).

An appropriate banking environment is considered a key pillar as well as enabler of economic growth (Koivu, 2002). The banking industry has been subject to this technological change (Bradley and Stewart 2003). In order to be in line with the changes in the operating environment, it is apparent that bank in Kenya and other financial institution have to embrace mobile banking in meeting customer demands (Tiwari and Buse, 2006). Providing banking through internet has proved fruitful in terms of cost control by employing automated ways of transacting other than the traditional method of labour intensive therefore higher productivity and profitability. Consequently, growing

partnership in financial institution and other service providers has lead to an increase in m banking as customers can transact and clear utility bills through their mobile.

1.1.1 Mobile Banking

The perceived low level of demand, low levels of bank of income, high bank fees, untailored products and services and limited geographical reach ensured only a small percentage of Kenyan population had access to banking services (Chogi, 2006). Banking was driven by income generated from fees for services rendered, interest earned deposits and interest received from loans. The move from traditional banking to agency banking and currently mobile banking has been beneficial to both the banks and customers as it reduces operating cost of the institution and its convenient and cheap as lesser fees are charged on mobile transaction.

Mobile banking is the provision or availment of banking services with the help of mobile devices. The advent of M-banking was fostered by competition from telecommunication industry mainly safaricom with their Mpesa services to their customers and Zain (formerly Airtel) with Zap services. These services facilitated the customers to deposit money into their account, transfer money to other user for instance sellers of goods and services, relatives and friend; this brought convenience.

The banking sector has had to adopt technological change to remain competitive. In search of competitive advantages in the technological financial service industry, banks have acknowledged value of differentiate themselves from others financial institution through new service distribution channels (Daniel 1999). Banks bureaucratic process of account opening cut out many rural poor as they could not qualify to own accounts. With

competition banks had to simplify the process and had to come up with innovative ways of doing so. Quite a number of banks have innovated various M-banking products for example Equity bank M-kesho, KCB Mobibank, Family bank Pesa pap and more recently M-swari of Commercial bank of Africa.

Mobile banking provides a number of advantages for both banks and customers. Mobile banking removes geographical limitation to customers and therefore bringing convenience. There is no time limitation i.e. banking maybe performed throughout the day and in any place. Mobile banking also provides efficient cash management and security of cash

1.1.2 Financial Performance

Financial performance is a subjective measure of how well an organization can use assets from its primary mode of business and generate revenues (Greenwood and Jovanovic, 1990). 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 (Jayawardhera and Foley, 2000).

Profit is the ultimate goal of firm. To measure the profitability, there are variety of ratios used of which Return on Asset, Return on Equity and Net Interest Margin are the major ones (Murthy and Sree, 2003). ROA is a major ratio that indicates the profitability of a bank. It is a ratio of Income to its total asset (Khrawish, 2011). It measures the ability of

an organization's management to generate income by utilizing company assets at their disposal. 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, relative to the amount of their 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 (the average earning assets). ROE is a financial ratio that refers to how much profit a company earned compared to the total amount of shareholder equity invested or found on the balance sheet. ROE is what the shareholders look in return for their investment.

1.1.3 Mobile Banking and Financial Performance

Mobile banking offers millions of people a potential solution in emerging markets that have access to a cell phone, yet remain excluded from the financial mainstream. It can make basic financial services more accessible by minimizing time and distance to the nearest retail bank branches (CGAP, 2006) as well as reducing the bank's own overheads and transaction- related costs. Mobile banking presents an opportunity for financial institutions to extend banking services to new customers thereby increasing their market (Lee, Lee and Kim, 2007).

Simpson (2002) suggests that e-banking is driven largely by the prospects of operating costs minimization and operating revenues maximization. A comparison of online banking in developed and emerging markets reveal that in developed markets lower costs and higher revenues are more noticeable. While Sullivan (2000) finds no systematic

evidence of a benefit of internet banking in US click and mortar banks, Furst, Lang, and Nolle. (2002) find that federally chartered US banks had higher ROE by using the click-and-mortar business model. Furst *et al* (2002) also examine the determinants of internet banking adoption and observe that more profitable banks adopt internet banking after 1998 but yet they are not the first movers. Jayawardhena and Foley (2000) show that internet banking results in cost and efficiency gains for banks yet very few banks are using it and only a little more than half a million customers are online in U.K.

1.1.4 Commercial Banks in Kenya

As at 31st December 2012, the banking sector comprised of the Central Bank of Kenya, as the regulatory authority, forty four banking institutions (forty three commercial banks and one mortgage finance company - MFC), four representative offices of foreign banks, six Deposit-Taking Microfinance Institutions (DTMs), one hundred and eighteen Forex Bureaus and two Credit Reference Bureaus (CRBs) (CBK, 2012). Out of the forty four banking institutions, thirty one locally owned banks comprise three with public shareholding and twenty eight privately owned while thirteen are foreign owned. The six DTMs, two CRBs and one hundred and eighteen forex bureaus are privately owned. The foreign owned financial institutions comprised of nine locally incorporated foreign banks and four branches of foreign incorporated banks.

According to Central Bank of Kenya (2012) out of the forty three commercial banks thirty of them are domestically owned and thirteen are foreign owned. In terms of asset holding, foreign banks accounted for about 35% of the banking assets as of 2012. In Kenya the commercial banks dominate the financial sector. In a country where the

financial sector is dominated by commercial banks, any failure in the sector has an immense implication on the economic growth of the country. This is due to the fact that any bankruptcy that could happen in the sector has a contagion effect that can lead to bank runs, crises and bring overall financial crisis and economic tribulations.

1.2 Research Problem

Technological change has been inevitable in the financial sector. The adoption of internet banking has changed the dimensions of competition following the introduction of Personal computer banking, Automated Teller Machines (ATMs) and phone banking, which are the initial cornerstones of electronic finance. The increased adoption and penetration of internet has added a new distribution channel to retail banking. Allen, Mcandrews and Strahan (2002) define E-finance as "the provision of financial services and markets using electronic communication and computation" and today banks are switching to multi-channel distribution of financial services in hybrid platforms where the traditional services of banks are provided through both "bricks and mortar" branches and Internet.

The banking sector in Kenya has experienced turbulent times following the collapse of many banks in the 1990s. In order to minimize their operational costs, commercial banks have adopted internet banking including ATMs, mobile banking and internet banking where customer can access their accounts on their personal computers. To facilitate further financial deepening, the Central Bank of Kenya in 2010, allowed regulated commercial banks to operate through third party agents, subject to licensing of agents. In May 2012, the Central Bank of Kenya allowed regulated deposit taking microfinance institutions to operate not only through third party agents, but to operate agencies. Mobile

network operators and financial institutions have responded rapidly to these new powers to adopt mobile and agency banking. Between 2007 and 2012, Safaricom rolled out more than forty thousand mobile payment agents nationwide. Since 2010 a total of ten banks have connected more than ten thousand six hundred bank agents. However, of the banks, two banks Equity Bank and Kenya Commercial Bank have been particularly quick to introduce agency networks across Kenya, with thousands of agents respectively. All these models are geared towards leveraging the operating costs of commercial banks.

Different scholars have done studies on electronic and mobile banking in Kenya. Kigen (2010) studied the impact of mobile banking on transaction costs of microfinance institutions where he found out that by then, mobile banking had reduced transaction costs considerably though they were not directly felt by the banks because of the then small mobile banking customer base. The current study differs from Kigen (2010) because the rate of mobile banking and the number of banks which have adopted mobile banking have increased. In addition, this study will consider overall financial performance and not just transactional costs.

Kingoo (2011) did a study on the relationship between electronic banking and financial performance of commercial banks in Kenya where he paid keen attention on the microfinance Institutions in Nairobi. However, the current study is focusing on commercial banks and not microfinance institutions. Kingoo (2011) also looked at the wider electronic banking whereas this study will only concentrate on mobile banking.

Munaye (2009) studied the application of mobile banking as a strategic response by equity bank Kenya limited to the challenge in the external environment.

Munaye (2009) reviewed the concept of mobile banking as a strategic response where its effects on financial performance were not considered. From the above discussions, it is evident that not much research has been focused on the economic and financial implication of mobile banking on the performance of commercial banks in Kenya. This research therefore aims at bridging the gap. To achieve this, this study will seek to answer one question: What is the effect of mobile banking on the financial performance of commercial banks in Kenya?

1.3 Research Objective

To determine the effect of mobile banking on the financial performance of commercial banks in Kenya.

1.4 Value of Study

This study will be of value to different stakeholders in the field.

To the management in commercial banks, this study will inform them on the financial effect of mobile banking on the performance of their institutions. Through the findings of this study, the management will be able to strategize on how to realize maximum benefits from mobile banking.

For the policy makers and agencies like the Central bank of Kenya (CBK), the findings of this study will be important in informing the policy formulation especially with regard to regulating the mobile banking services in Kenya. The research findings add dimension that may help improve policy direction with regard to regulation of mobile banking as well as factors that spur economic growth.

To the academicians and students of finance, this study will help build the knowledge base in the discipline by adding on the existing literature on mobile banking and financial performance. The study will be used as a source of reference material besides suggesting areas where future research may be conducted.

CHAPTER TWO

LITERATURE REVIEW

2.1   Introduction

This chapter reviews the literature on the economic and financial effect of mobile banking on the performance of commercial banks in Kenya. From this review, broad categories will be derived which will help to identify the critical impact of economic and financial effect of mobile banking on the performance of commercial banks in Kenya. Specifically, the chapter addresses the theoretical framework guiding the study, economic and financial effect of mobile banking, empirical literature and chapter summary.

2.2 Theoretical Review

This section reviews theories that will guide the study. It consists of the theories governing the performance of commercial banks in their operations. In particular, the section looks at the financial intermediation theory which deals with the core function of financial institutions which in intermediating between the surplus and the deficit units for sustained economic development. It also reviews the modern economics theory which holds that for a business to make returns, it has to obey the modern economics. It also reviews that market power theory that holds that states that increased external market forces results into Market Power.

2.2.1 Financial Intermediation Theory

Financial intermediation is a process which involves surplus units depositing funds with financial institutions who then lend to deficit units. Bisignano (1992) identified that

financial intermediaries can be distinguished by four criteria. First, their main categories of liabilities or deposits are specified for a fixed sum which is not related to the performance of a portfolio. Second, the deposits are typically short-term and of a much shorter term than their assets. Third, a high proportion of their liabilities are chequeable which can be withdrawn on demand and fourthly, their liabilities and assets are largely not transferable. The most important contribution of intermediaries is a steady flow of funds from surplus to deficit units.

Diamond and Dybvig (1983) analyses the provision of liquidity that is transformation of illiquid assets into liquid liabilities by banks. In their model identical investors or depositors are risk averse and uncertain about the timing of their future consumption need without an intermediary all investors are locked into illiquid long term investments that yield high pay offs to those who consume later.

According to Scholtens and van Wensveen (2003), the role of the financial intermediary is essentially seen as that of creating specialized financial commodities. These are created whenever an intermediary finds that it can sell them for prices which are expected to cover all costs of their production, both direct costs and opportunity costs. Financial intermediaries exist due to market imperfections. As such, in a 'perfect' market situation, with no transaction or information costs, financial intermediaries would not exist. Numerous markets are characterized by informational differences between buyers and sellers. In financial markets, information asymmetries are particularly pronounced. Borrowers typically know their collateral, industriousness, and moral integrity better than do lenders. On the other hand, entrepreneurs possess inside information about their own

projects for which they seek financing (Leland and Pyle, 1977). Moral hazard hampers the transfer of information between market participants, which is an important factor for projects of good quality to be financed.

2.2.2 Modern Economics Theory

Modern economics has gone far in discovering the various pathways through which millions of expectations of, and decisions by, individuals can give rise to emergent features of communities and societies like rate of inflation, productivity gains, and level of national income, prices, and stocks of various types of capital, cultural values, and social norms. Two factors make economic theory particularly difficult (Sohail and Shanmugham, 2003). First, individual decisions at any moment are themselves influenced by these emergent features, by past decisions learning, practice, and habit, and by future expectations. Second, the emergent features that can be well handled by existing economic theory and policy concern only fast-moving variables. The more slowly emergent properties that affect attitudes, culture, and institutional arrangements are recognized, but are poorly incorporated.

According to Tiwari, Buse and Herstatt (2006), economists know that success in achieving financial return from fast dynamics leads to slowly emergent, nearly hidden, changes in deeper and slower structures, changes that can ultimately trigger sudden crisis and surprise. But the complexities that arise are such that most modern economists are frustrated in their attempts to understand the interactions between fast- and slow-moving emergent features.

2.2.3 Market Power and Efficiency Structure Theories

The MP theory states that increased external market forces results into market power which is defined as the capacity of an organisation to increase its prices without losing all its clients. In banks, as in other business organisations, 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 optimized at a strategic balance point (Shepherd, 1986). 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 struture theory (ES) suggests that enhanced managerial and scale efficiency leads to higher concentration and then to higher profitability. According to Olweny and Shipho (2011) 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.

From the above theories, it is possible to conclude that bank performance is influenced by both internal and external factors. The internal factors include bank size, capital, management efficiency and risk management capacity. The same scholars contend that the major external factors that influence bank performance are macroeconomic variables such as interest rate, inflation, economic growth and other factors like ownership.

2.3 Bank Performance Indicators

Profit is the ultimate goal of commercial banks hence all the strategies designed and activities performed thereof are meant to realize this grand objective. To measure the profitability of commercial banks, there are variety of ratios used of which Return on Asset, Return on Equity and Net Interest Margin are the major ones (Murthy and Sree, 2003).

Alkhatib (2012) studying the financial performance of Palestinian commercial banks listed on Palestine securities exchange (PEX) measured financial performance using three indicators; Internal–based performance measured by Return on Assets (ROA), Market-based performance measured by Tobin's Q model (Price / Book value of Equity) and Economic–based performance measured by Economic Value add. The study employed the correlation and multiple regression analysis of annual time series data from 2005-2010 to capture the impact of bank size, credit risk, operational efficiency and asset management on financial performance measured by the three indicators, and to create a good-fit regression model to predict the future financial performance of these banks. The study rejected the hypothesis claiming that "there existed statistically insignificant impact of bank size, credit risk, operational efficiency and asset management on financial performance of Palestinian commercial banks".

2.3.1 Return on Equity (ROE)

ROE is a financial ratio that refers to how much profit a company earned compared to the total amount of shareholder equity invested or found on the balance sheet. ROE is what the shareholders look in return for their investment. A business that has a high return on

equity is more likely to be one that is capable of generating cash internally. Thus, the higher the ROE the better the company is in terms of profit generation. It is further explained by Khrawish (2011) that ROE is the ratio of Net Income after Taxes divided by Total Equity Capital. It represents the rate of return earned on the funds invested in the bank by its stockholders.ROE reflects how effectively a bank management is using shareholders' funds. Thus, it can be deduced from the above statement that the better the ROE the more effective the management in utilizing the shareholders capital.

2.3.2 Return on Asset

ROA is also another major ratio that indicates the profitability of a bank. It is a ratio of Income to its total asset (Khrawish, 2011). It measures the ability of the bank management to generate income by utilizing company assets at their disposal. In other words, it shows how efficiently the resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution. Wong (2004) stated that a higher ROA shows that the company is more efficient in using its resources.

2.3.3 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

defined 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).

2.3.4 CAMEL rating system

CAMEL is an acronym for five components of bank safety and soundness: Capital adequacy, Asset quality, Management quality, Earning ability and Liquidity. These are discussed below:

2.3.4.1 Capital Adequacy

Karlyn (1984) defines the capital adequacy in term of capital-deposit ratio because the primary risk is depository risk derived from the sudden and considerably large scale of deposit withdrawals. Capital adequacy is the capital expected to maintain balance with the risks exposure of the financial institution such as credit risk, market risk and operational risk, in order to absorb the potential losses and protect the financial institution's debt holder. "Meeting statutory minimum capital requirement is the key factor in deciding the capital adequacy, and maintaining an adequate level of capital is a critical element". The capital adequacy is estimated based upon the following key financial ratios:

2.3.4.2 Asset quality

Frost (2004) stresses that the asset quality indicators highlight the use of nonperforming 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". A 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.

2.3.4.3 Management Quality

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).

2.3.4.4 Earning ability

In accordance with Grier (2007)'s 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.

2.3.4.5 Liquidity

Grier (2007) emphasizes that "the liquidity expresses the degree to which a bank is capable of fulfilling its respective obligations". Banks makes money by mobilizing short-term deposits at lower interest rate, and lending or investing these funds in long term at higher rates, so it is hazardous for banks mismatching their lending interest rate. The profitability is estimated based upon the following key financial ratios. There should be adequacy of liquidity sources compared to present and future needs, and availability of assets readily convertible to cask without undue loss. The fund management practices should ensure an institution is able to maintain a level of liquidity sufficient to meet its financial obligations in a timely manner; and capable of quickly liquidating assets with minimal loss. (Uniform Financial Institutions Rating System, 1997).

2.4 Economic and Financial Implication of Mobile Banking

The government recognizes the role played by the mobile phones and associated technologies in the economy growth and development (Sessional paper 2005). As the numbers of mobile phone uses increases there has been a pervasive impact on people's lives. Mobile banking has both significant implication of the economy and financial performance of the organization involved.

Traditionally provision of banking services was an expensive venture. The banks had to invest in staff, machines and building in order to provide services to their customers.

With advent of M-banking banks need not invest in capital equipment to provide banking services.

Many people in rural areas have access to financial services brought about by mobile penetration. Majority of urbans dwellers use M-banking services to make payments of airtime, prepaid electricity, and remittance to friends and relatives in rural villages. M-banking is facilitating redistribution of wealth for instance new business start in order to provide services to the users; new agency growing in oders to serve the unreached areas in the country. M-banking and mobile phone business contribute to economic development though creating opportunities for income generation.

2.5 Empirical Review of Effects of Mobile Banking

Several studies have been conducted on the effects of mobile banking and the performance of commercial banks. Tchouassi (2012) sought to find out whether mobile phones really work to extend banking services to the unbanked using empirical Lessons from Selected Sub-Saharan Africa Countries. This study sought to discuss how mobile phones could be used to extend banking services to the unbanked, poor and vulnerable population. The study noted that poor, vulnerable and low-income households in Sub-Saharan Africa (SSA) countries often lacked access to bank accounts and faced high costs for conducting basic financial transactions.The mobile phone presented a great opportunity for the provision of financial services to the unbanked. In addition to technological and economic innovation, policy and regulatory innovation was needed to make these services a reality.

Ching *et al* (2011) studied the factors affecting Malaysian mobile banking adoption from the point of an empirical analysis. This study aimed at extending the Technology Acceptance Model (TAM) to investigate mobile banking acceptance in Malaysia. More specifically, the objective of this study was to examine the relationships between constructs of perceived usefulness, perceived ease of use, social norms, perceived risks, perceived innovativeness, and perceived relative advantages towards behavioural intention in adopting mobile banking. The findings of this study revealed that perceived usefulness, perceived ease of use, relative advantages, perceived risks and personal innovativeness were the factors affecting the behavioral intention of mobile users to adopt mobile banking services in Malaysia. Meanwhile, the social norms were the only factor found to be insignificant in this study.

Donner and Tellez (2008) did a study on mobile banking and economic development where they sought to link adoption, impact, and use. The study established that through offering a way to lower the costs of moving money from place to place and offering a way to bring more users into contact with formal financial systems, m-banking/m-payments systems could prove to be an important innovation for the developing world. However, the true measure of that importance required multiple studies using multiple methodologies and multiple theoretical perspectives before answering the questions about adoption and impact.

Tiwari, Buse and Herstatt (2006) studied mobile banking as business strategy: impact of mobile technologies on customer behaviour and its implications for banks. The study sought to examine the opportunities for banks to generate revenues by offering value-

added, innovative mobile financial services while retaining and even extending their base of technology-savvy customers

Wambari (2009) studied mobile banking in developing countries using a case of Kenya. This study sought to establish the importance of mobile banking in the day to- day running of small businesses in Kenya and to understand the challenges involved in using m-banking as a business tool and appreciate the advantages and disadvantages therein. This study elaborated that the adoption and use of mobile phones is product of a social process, embedded in social practices such as SMEs Practices which leads to some economic benefits.

Al-Jabri (2012) studied mobile banking adoption by looking at the application of diffusion of innovation theory. This study sought to investigate a set of technical attributes and how they influence mobile banking adoption in a developing nation, like Saudi Arabia. The study used diffusion of innovation as a base-line theory to investigate factors that may influence mobile banking adoption and use. More specifically, the objective of this research was to examine the potential facilitators and inhibitors of mobile banking adoption. The study was guided by six hypothesis including: relative advantage having a positive effect on mobile banking adoption; Complexity having a negative effect on mobile banking adoption; Compatibility having a positive effect on mobile banking adoption; Observability having a positive effect on mobile banking adoption; Trialability having a positive effect on mobile banking adoption; and perceived risk having a negative effect on mobile banking adoption.

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The findings suggest that banks, in Saudi Arabia, should offer mobile banking services that are compatible with various current user requirements, past experiences, lifestyle and beliefs in order to fulfill customer expectations. With better mobile banking support and provision of variety of services, the more useful customers perceive mobile banking to be and to increase their level of adoption. Hence, bank's attention should focus on understanding customer behavior and designing reliable mobile banking systems that will meet their needs and provide useful and quality services. In addition, banks should focus on communicating information that emphasizes the relative advantage and usefulness of mobile banking compared to other banking channels like physical presence to the bank or using ATM machines. Banks must seek to reduce risk perceived by their customers by offering specific guarantees protecting them and taking their complaints seriously and urgently.

According to Koivu (2002) uptake of mobile phone in Kenya has been unprecedented. Mobile banking in Kenya affects performance of organization, behavior and decision making of the entire economy. The trend of continued reliance on mobile devices to execute monetary transaction is steadily gaining momentum. Mobile banking is one innovation which has progressively rendered itself in pervasive ways of cutting across numerous sectors of economy and industry.

Kigen (2010) studied the impact of mobile banking on transaction costs of microfinance institutions where he found out that by then, mobile banking had reduced transaction costs considerably though they were not directly felt by the banks because of the then small mobile banking customer base. Kigen (2010) sought to determine the impact that mobile banking bore on transactional costs of microfinance institutions.

Kingoo (2011) studied the relationship between electronic banking and financial performance of commercial banks in Kenya where he paid keen attention on the microfinance Institutions in Nairobi. Kingoo (2011) looked at the wider electronic banking whereas this study will only concentrate on mobile banking.

Munaye (2009) studied the application of mobile banking as a strategic response by equity bank Kenya limited to the challenge in the external environment. Munaye (2009) reviewed the concept of mobile banking as a strategic response where its effects on financial performance were not considered.

Zimmerman (2010) discovered that mobile banking in developing world was an object of skepticism among financial insiders while proponents argued that cell phones could revolutionize personal finance in poorer country, regulators warned of money laundering and most bankers worried that low customer balances wouldn't be worth transaction costs. From the above discussion of empirical literature, this study hypothesizes that mobile banking supports the delivery of mobile banking services in an economy.

2.6 Summary of Literature Review

This chapter started by looking at the theoretical framework where it discussed the theories on which the study is found: financial intermediation theory and modern economics theory. According to financial intermediation theory, financial institutions exist to mediate between the surplus and deficit units in an economy by facilitating the transfer of resources. However, this needs to be done in an economic way so as to minimize the operating costs and maximize the revenues for these banks. Financial intermediation theory brings out the role played by mobile banking in the financial intermediation process by enabling the accessibility of banking services over the mobile

phone, While the modern economics theory puts into perspective the changing times and adaption to the environment. Smirlok (1985), subscribing to the efficiency hypothesis, considers market share as a proxy for efficiency. The efficiency hypothesis prevails when a significant positive correlation between market share and profitability is signaled.

From the above discussion of the theoretical and empirical literature, limited research has been conducted on the economic and financial impact of mobile banking on the performance of Kenyan banks. The existing studies have been done in other economies which have different operating environment from that in Kenya. This study therefore seeks to fill this research gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Introduction

This chapter sets out various stages and phases that were followed in completing the study. In this stage, most decisions about how research was executed and how data was gathered, towards the completion of research. Precisely, the section covers; research design, target population, data collection and data analysis.

3.2 Research Design

The study adopted a descriptive research design. Mugenda and Mugenda (2003) describes descriptive research design as a systematic, empirical inquiring into which the researcher does not have a direct control of independent variable as their manifestation has already occurred or because the inherently cannot be manipulated. Descriptive studies are concerned with the what, where and how of a phenomenon hence more placed to build a profile on that phenomenon (Mugenda and Mugenda, 2003). Descriptive research design is more appropriate because the study seeks to build a profile about the impact of mobile banking on the financial performance of commercial banks in Kenya.

3.3 Population of the Study

Population in statistics is the specific population about which information is desired. According to Ngechu (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated. Following the small number of institutions in the industry, the study included all the institutions

hence a census study was conducted. The target population for the study included the 43 commercial banks operating in Kenya as at December 2011.

3.4 Data Collection

The study used secondary data from the Audited Financial statements at the Bank and those deposited at the Nairobi Securities Exchange. The data was collected using data collection sheet which was edited, coded and cleaned. Data was mainly obtained covering the period between 31st January 2007 and 31st December 2011. Monthly data was used in the analysis.

3.5 Data Analysis

The study used Statistical Package for Social Sciences Version 21.0 to aid in data analysis. The paired t-test, a non-parametric test of differences developed by Sir Williams Gosset (Mugenda & Mugenda, 1999) was used in this study as a test of significance. The analysis will be at 0.05 level of significance.

In order to determine the effect of mobile banking on the financial performance of commercial banks in Kenya, the researcher conducted a multiple regression analysis using the following regression model. This model was based on Kigen (2010) who analyzed the impact of mobile banking on transaction costs of microfinance institutions by looking at mobile banking adoption and the behavior of transaction costs and established that mobile banking had reduced transaction costs considerably though they were not directly felt by the banks because of the then small mobile banking customer base. The model is further supported by Kingoo (2011) in studying the relationship between electronic banking and financial performance of commercial banks in Kenya by

looking at the wider electronic banking. The study used Return on Assets as a measure of financial performance and overall operating cost as independent variable:-

$$Y = Bo + B_1X_1 + B_2X_2 + \varepsilon$$

Where Y = Financial Performance of commercial banks (ROE)

X_1 = Monthly value moved through mobile banking

X_2 = Number of users of mobile banking

ε = Error term

Bo=Constant

B_1=Coefficient of X_1

B_2=Coefficient of X_2

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). On extracting the ANOVA statistics, the researcher looked at the significance value. The study was tested at 95% confidence level and 5% significant level. If the significance number was found to be less than the critical value (α) set 2.4, then the conclusion will be that the model was significant in explaining the relationship.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1   Introduction

This chapter presents analysis and findings of the study as set out in the research objective and research methodology. The study findings are presented on the effects of mobile banking on the financial performance of commercial banks in Kenya. The data was gathered exclusively from the secondary source which included the records at Central Bank of Kenya (CBK).

4.2 Number of mobile Banking Users

The study sought to establish the developments in the number of mobile banking users among all commercial banks since its inception. The findings were as shown in the figure 4.1 below and appendix II:

Figure 4.1: Number of Mobile banking Users
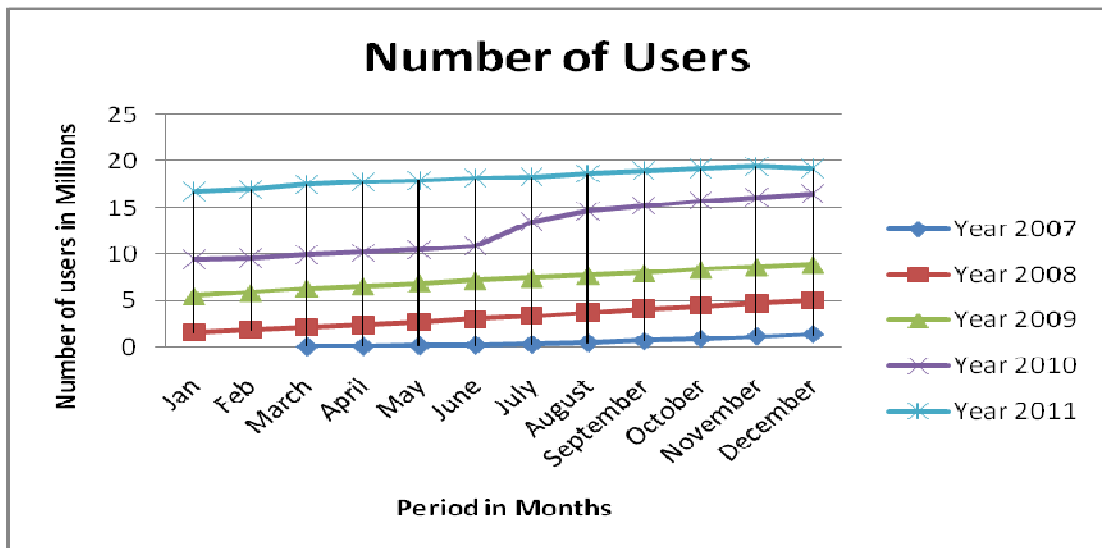
Source: (Research Findings, 2013)

From the findings presented above, the study established that in the incpetion year 2007, the number of users in the first month was 0.02 million people. The numbers grew steadily from month to month during the year to close at 1.35 million users. As the period lapsed, the number of users increased. The average for the year stood at 0.506 million users.

For the second year, the number of users started at 1.59 millions then grew steadily from month to month to close the year at 5.08 million. The huge increase led to a huge increase in the annual average users of 3.25916 million. For the year 2009, there were 5.48 million users in January which grew again throughtout the year to reach 8.88 by December. This translated into an annual average of 7.265 million users.

For the year 2010, The number of users were 9.48 million in January. The positive trend in the number of users continued in this year to close at 16.45 million users. The annual average was 12.6875 million users. The year 2011 started on 16.69 million users which again grew steadily throughout the year to close at 19.19 million users in December. This translated into an annual average of 18.2125 million users. These findings show that as time lapsed, the number of mobile banking users increased. The commercial banks could now start enjoying economies of scale as more and more customers adopted mobile banking. This affected the banking operations especially the staff costs positively as the number of customers visiting the banking halls to transact could tremendously reduce as more and more customers adopt mobile banking. The resulting effects could be better services in the banking halls as they would be less congested. This could also lead to a reduction in the headcount offering services in the banking halls. The adoption of mobile banking also contributes positively to the provision of standardized services.

4.3 Monthly Value moved Through Mobile Banking

The study sought to establish the Monthly value moved through mobile banking during the study period. The findings were as indicated in the figure 4.2 below and appendix III:

Figure 4.2: Monthly value moved Through Mobile Banking
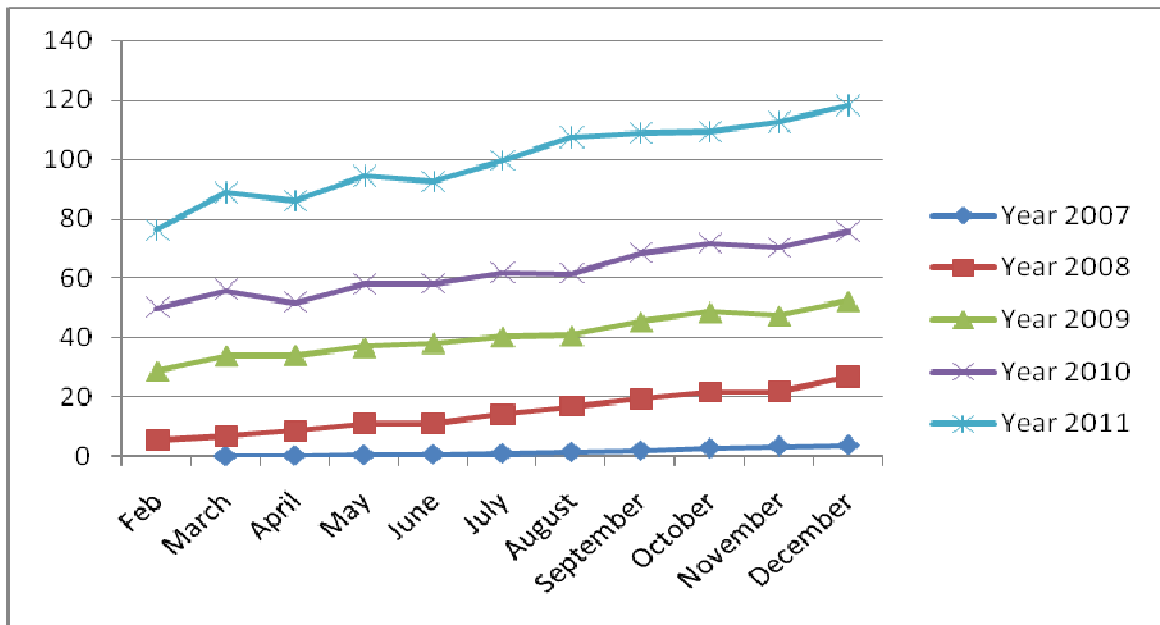
Source: (Research Findings, 2013)

From the findings illustrated in the figure 4.2 above, the study established that in the inception month, the total amount moved through mobile banking was Ksh. 0.06 billion which grew from month to month during the year 2007 to close the year at Ksh. 3.77 billion in December. The annual average for the year 2007 was Ksh. 1.631 billion.

In the year 2009, the total amount moved through mobile banking in January was Ksh. 27.07 billion which still grew rapidly during the year to close at Ksh. 52.34 billion in December. The annual average stood at Kshs. 39.4525. For the year 2010, the amount moved by end of January was Kshs. 48.46 billion. This amount grew steadily during the year to close at Kshs. 70.27 billion. The annual average was Kshs. 61.01833 billion.

During the year 2011, the number of companies offering mobile money transfer had increased to six, namely; Safaricom (M-Pesa), Airtel Networks (Airtel Money), Essar Telcom (Yu Cash), Orange Telkom (Orange Money), Mobile Pay (Tangaza) and Mobikash (Mobikash). The amounts transacted through these services were maintained high above 75 billion. Notably, there was a characteristic fluctuation in transaction during this year. From a low figure of Ksh 0.06 billion in March 2007 to Ksh. 118.08 billion by the end of the study period.

4.4 Financial Performance of commercial banks

The study analyzed the consolidated financial performance of the banking sector during the study period. The findings were as shown in the figure 4.3 below:

Figure 4.3: Return on Equity
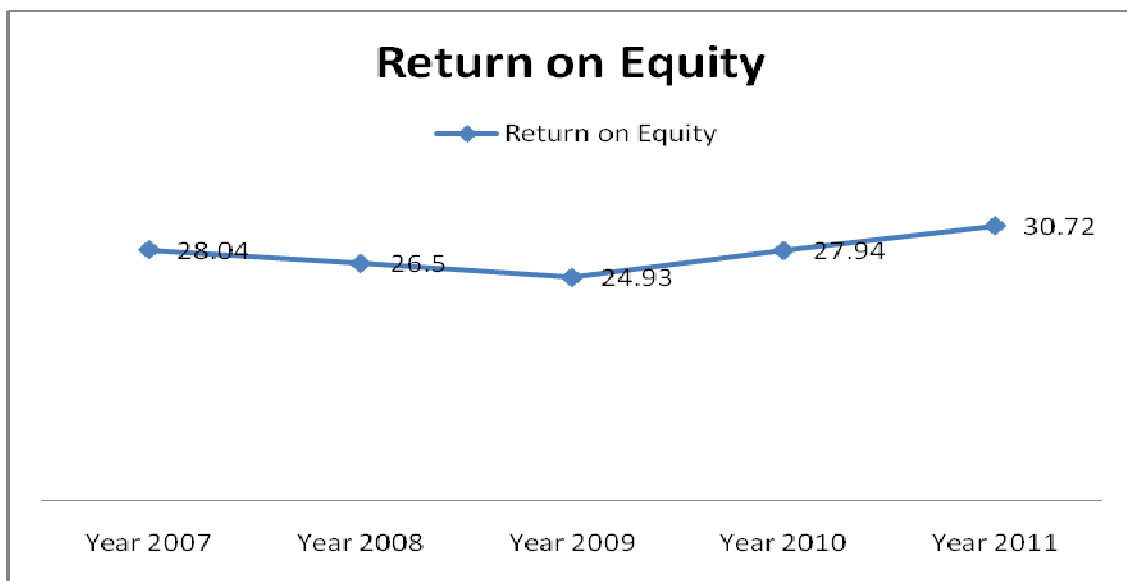
Source: (Research Findings, 2013)

From the study findings in figure 4.3 above, the study established that the banking industry return on Equity was 28.04%. The ROE dropped slightly in the following year

2008 to 26.5%. The performance of the banking industry reached its lowest point in the study period at 24.93 in the year 2009. This could be attributed to many factors beyond this study as the performance of commercial banks in a function of more variables including the macroeconomic variables besides the mobile banking effects being looked at in this study. The ROE picked an upward trend in the year 2010 to stand at 27.94%. The upward trend was maintained in the following year to stand at 30.72%. From the findings presented above, the findings show that the performance of the banking sector dropped slightly during the years 2008/2009. This could largely be attributed to the post election violenec that rocked the Country in this period.

4.5 Regression Analysis

In order to establish the relationship between the mobile banking and the financial performance of the banking sector in Kenya, the study conducted a multiple regression analysis. The findings were as shown in the table 4.1 below:

Table 4.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.608[a]	.370	-.260	2.40644
a. Predictors: (Constant), Monthly value moved, number of mobile banking users				

Source:(Research Findings,2013)

Coefficient of determination explains the extent to which changes in the dependent variable (financial performance of commercial banks in Kenya) can be explained by the change in the independent variables or the percentage of variation in the dependent variable (financial performance of commercial banks in Kenya) that is explained by all

the two independent variables (Monthly value moved, number of mobile banking users).

The two independent variables that were studied, explain only 37% of the changes in the financial performance of commercial banks in Kenya as represented by the R^2. The study shows that there is a weak positive insignificant correlation between mobile banking and financial performance of commercial banks in Kenya.

Table 4.2: ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.797	2	3.399	.587	.630[a]
	Residual	11.582	2	5.791		
	Total	18.379	4			
a. Predictors: (Constant), Monthly value moved, number of mobile banking users						
b. Dependent Variable: Financial Performance						

Source: Research data

The probability value of 0.630 indicates that the regression was insignificant in predicting how mobile banking impacts the financial growth of the banking sector in Kenya. The F critical at 5% level of significance was 0.587 since F calculated is less than the F critical (value = 2.371), this shows that the overall model was insignificant.

Table 4.3: Coefficients of Determination

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	26.123	1.947		13.414	.006
	number of mobile banking users	.012	.394	.213	.030	.979
	Monthly value moved	.118	2.108	.395	.056	.960
a. Dependent Variable: Financial Performance						

Source: Research data

The researcher conducted a regression analysis so as to determine the relationship between mobile banking and financial performance of banking industry in Kenya. The regression equation ($Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2$) was:

$Y = 26.123 + 0.012 X_1 + 0.118 X_2$

Whereby Y = financial performance of commercial banks in Kenya; X_1 = Number of mobile banking users; X_2 = Monthly Value moved.

According to the regression equation established, taking all factors (number of mobile banking users and total value moved through mobile banking) constant at zero, the financial performance of the banking sector will be 26.123%. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in number of users will lead to a 0.012 increase in financial performance of the banking sector. A unit increase in the amount of money moved through mobile banking will lead to a 0.118 increase in in the financial performance of the banking sector. This notwithstanding, the study shows that there is a weak positive insignificant correlation between mobile banking and financial performance of commercial banks in Kenya. Therefore, it can be deduced that mobile banking has an impact on the financial performance of commercial banks although not significant.

4.6 Interpretation of Findings

From the findings presented above, it is evident that as the number of mobile banking users increased, the monthly amount moved through mobile banking increased. At the beginning in the year 2007, the users were few as many individuals must have been skeptical as regards the security of mobile banking. However, as more and more people

learned of the safety of the service, they adopted it and hence the increase in the amount of money transacted through mobile banking. These findings are consistent with the argument by Al-Jabri (2012) who studied mobile banking adoption by looking at the application of diffusion of innovation theory and established that with better mobile banking support and provision of variety of services, the more useful customers perceive mobile banking to be and to increase their level of adoption. The increase in the number of users shows confidence among mobile banking users. This shows that commercial banks took keen interest in ensuring minimal risk exposure for their customers. As Al-Jabri (2012) suggested, banks must seek to reduce risk perceived by their customers by offering specific guarantees protecting them and taking their complaints seriously and urgently.

The study indicates that there is a weak positive insignificant correlation between mobile banking and financial performance of commercial banks in Kenya. This was largely because the financial performance of commercial banks is a function of many other variables not looked at in this study. However, with the increasing levels of adoption of information technology, commercial banks that adopt the latest information technologies are likely to outperform those who may rely on brick and mortar branch.

From the findings, the performance of commercial banks as measured by return on equity started at a high of 28.04 then dropped in the year 2008 and 2009 to reach a low of 24.93. this could be largely attributed to the post election violence witnessed in Kenya which may have had negative effects on overall economic performance in the Country. As indicated earlier, financial performance of commercial banks is a function of many other variables not looked at in this study. However, despite this, the amount of money

transacted through mobile banking and number of users maintained a positive increase. There is also a directly positive relationship between number of mobile banking users and the amount of money moved through mobile banking over the study period. However, the two independent variables that were studied, explain only 37% of the changes in the financial performance of commercial banks in Kenya as represented by the R^2. The study shows that there is a weak positive insignificant correlation between mobile banking and financial performance of commercial banks in Kenya.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presented the summary of key data findings, conclusions drawn from the findings highlighted and policy recommendations that were made. The conclusions and recommendations drawn were in quest of addressing research objectives of establishing the effect of mobile banking on the financial performance of commercial banks in Kenya.

5.2 Summary

Financial institutions in Kenya have adopted mobile services to provide crucial banking services to customers in Kenya. The results show that as the monthly value moved through mobile banking increases, the profitability of the commercial banks increase. The research shows that mobile banking to a larger extent impacts the financial performance of commercial banks in Kenya in that it helps reduce unnecessary cost, increase efficiency and improves on service delivery to customers. However, for the period 2008 and 2009, this relationship seems not to hold as the value moved continued to increase while the performance of the banking industry as a whole dropped as measured by return on assets. This could however be explained that although there is a relationship between mobile banking and financial performance of commercial banks in Kenya, the relationship is somehow weak. This was well explained by the F critical at 5% level of significance which was 0.587 falling below the F critical (value = 2.371). In

addition, the R squared value was extremely low at 37% showing that the effect of mobile banking on the financial performance of the banking industry was low.

However, the study concludes that mobile banking is being used to improve financial operations. The banks have put in place measures become more competitive by keeping pace with the technological developments. It can also be noted from the findings on the number of users that the numbers keep increasing from one year to another. This shows that customers are appreciating and embracing mobile banking. This could be attributed to the advantages offered by mobile banking which include convenience and flexibility.

5.3   Conclusions

From the research findings presented in chapter four and above summary of findings, the study concludes that there is a weak positive relationship between mobile banking and financial performance of commercial banks in Kenya. This could be attributed to the trends recorded in the two variables where the number of users and monthly transfers maintained a positive growth rate while financial performance of commercial banks was affected by many variables which have major impacts compared to the adoption of mobile banking. Financial performance of commercial banks in Kenya was majorly affected by macro-economic variables like post election violence, inflation and foreign exchange rates fluctuations among other macro-economic variables which were outside the scope of this study.

5.4   Policy Recommendations

From the above conclusion, the study recommends that policy makers consider mobile banking in their formulation of policies because of the technological developments and

the expected switch from physical branch networks to technologically supported banking services. This is because despite negligible relationship between mobile banking and financial performance of commercial banks in Kenya, the impact could be pronounced if much change is recorded in technological developments and more customers adopt mobile banking services. This is because the relationship may not be direct but an indirect one resulting from the convenience that the mobile banking services offers to commercial banks.

Mobile banking is being used to improve financial operations in commercial banks. The banks have put in place measures to become more competitive by training its staff, investing in research and development of technology. In the long run, mobile banking is likely to have major impacts on the profitability of commercial banks as it smoothes business operations.

The study further recommends that commercial banks keep adopting and using mobile banking in their operations because the number of people with access to a mobile hand set is increasing every day. In addition, the convergence of mobile phones and commercial banks has revolutionized the banking operations. For example, Safaricom limited in conjunction with Commercial Bank of Africa launched M-Shwari services which provide registered members an opportunity to borrow money from the bank and repay conveniently. This has introduced another perspective that is likely to revolutionize the banking operations for increased profitability.

5.5   Limitations of the Study

A limitation was regarded as a factor that was present and contributed to the researcher getting either inadequate information or if otherwise the response given would have been totally different from what the researcher expected. The main limitations of this study were: the data used was secondary data generated for other purposes hence may not accurately predict the relationship among the variables. The measures used may keep on varying from one year to another subject to the prevailing condition. For example the financial performance of commercial banks was subject to the total assets owned by commercial banks. In addition, changes in the macroeconomic environment could have affected the profitability of commercial banks e.g. the post election violence which slowed down economic development.

Another limitation for the study included the short period which mobile banking has been in existence which could not give a long trend for analysis. Mobile banking was only introduced in Kenya by March 2007. It has only been six years since the launch which may not give a clear picture of the relationship as not all commercial banks adopted it at ago yet the performance used in the study takes into account the performance from all banks.

5.6 Suggestions for Further Studies

The study suggests that further research be conducted on the relationship between mobile banking and financial performance in other countries within the East African Community. This study only concentrated on Kenya yet mobile banking has been adopted in all members of the East African Community.

The study further recommends that another study be conducted in Kenya on the relationship between mobile banking and economic growth to establish the contributions of mobile banking on the growth of the economy.

The study further suggests that another study be conducted on the impact of mobile banking on financial deepening in Kenya. The Central Bank statistics show that as a result of mobile banking, there is an increase in the level of financial deepening in Kenya of upto about 85%. A study needs to be carried out to ascertain the effectiveness of mobile banking in financial deepening.

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APPENDICES

Appendix 1: List of commercial Banks in Kenya as at 31st December 2011

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

Source: (Central Bank of Kenya)

Appendix 1: Data Collection Sheet

Year		ROA
2007		
2008		
2009		
2010		
2011		
2012		

Appendix III: Monthly amount of Money moved through Mobile banks

Period (Years)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Average
Year 2007			0.06	0.22	0.48	0.72	1.07	1.58	2.07	2.83	3.51	3.77	1.631
Year 2008	4.06	5.22	6.75	8.39	10.9	10.92	14.02	16.76	19.27	21.6	21.7	26.99	13.88167
Year 2009	27.07	28.69	33.82	34.02	36.81	38.18	40.34	40.68	45.37	48.64	47.47	52.34	39.4525
Year 2010	48.46	49.91	56.12	51.81	58.08	58.1	61.77	61.53	68.51	71.79	70.27	75.87	61.01833
Year 2011	75.43	76.34	89	86.09	94.37	92.64	99.71	107.42	108.61	109.12	112.33	118.08	97.42833

Appendix IV: Number of mobile banking Users

Period (Years)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Average
Year 2007			0.02	0.05	0.11	0.18	0.27	0.43	0.64	0.88	1.13	1.35	0.506
Year 2008	1.59	1.82	2.08	2.37	2.72	3.04	3.37	3.73	4.14	4.42	4.75	5.08	3.259167
Year 2009	5.48	5.82	6.29	6.53	6.84	7.19	7.43	7.71	8.02	8.37	8.62	8.88	7.265
Year 2010	9.48	9.67	9.97	10.2	10.49	10.91	13.47	14.59	15.22	15.73	16.07	16.45	12.6875
Year 2011	16.69	16.89	17.47	17.76	17.92	18.15	18.31	18.61	18.89	19.21	19.46	19.19	18.2125