MOBILE BANKING ADOPTION IN THE BANKING INDUSTRY IN KENYA

BY

ESTHER A. OUKO ODERA

D61/71319/2008

A MANAGEMENT RESEARCH PROPOSAL SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION AWARDED BY THE SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI.

OCTOBER, 2013

DECLARATION

This is to declare that this research project is my original work that has not been presented to any other University or Institution of Higher Learning for examination.

Signed: ---------- Date: ----------

ESTHER ODERA

D61/71319/2008

This is to declare that this project has been submitted for examination with my approval as the university supervisor

SUPERVISOR

Signature: ---------- Date: ----------

DR. KATE LITONDO

ACKNOWLEDGEMENT

I take this opportunity to thank God for this far He has brought me. I am indebted to my family for their understanding and support, which made it possible for me to pursue this program. I also appreciate all my colleagues and friends for their support as well. I also wish to extend special gratitude to my supervisor, Dr. Litondo for her advice, guidance and constant feedback which helped in the completion of this project. Her guidance, encouragement and patience in reading, correcting, re-reading and refining this work are commendable.

DEDICATION

I dedicate this work to my family, my husband Dennis and son Adrian for the sacrifice they made for me to complete this course. Their love, care, encouragement and understanding inspired me to achieve this goal.

TABLE OF CONTENTS

LIST OF FIGURES

Page

LIST OF TABLES

Page

CHAPTER ONE: INTRODUCTION

1.1 Background

Recent years have witnessed an increasing convergence of digital technologies. Information technology has gradually converged with telecommunication technologies to give us Information and Communication Technology (ICT), hence the integration of telecommunications, data communications and mass communications into a single medium (Lucey, 2005). According to Chafey (2003), the manner in which wireless devices (such as mobile phones) are being used has also changed in a relatively short period of time. Consumers are gradually embracing their portable wireless devices as an alternative means to access their bank accounts. The mobile and wireless market has been one of the fastest growing markets in the world and is still growing at a rapid pace.

However, there is no universal form of mobile banking; rather, purposes and structures vary from country to country. The systems offer a variety of financial functions, including micro payments to merchants, bill-payments to utilities, money transfers between individuals, and long-distance remittances. Currently, different institutional and business models deliver these systems. Some are offered entirely by banks, others entirely by telecommunications providers, and still others involve a partnership between a bank and a telecommunications provider (Porteous, 2006).

1.1.1 Mobile Banking

Mobile banking is causing a flurry of activity in the world's financial services industry. In fact, it is leapfrogging traditional banking and now many top banks are up and running with their own mobile banking solutions, trying to take advantage of technology that comes with mobile phones and introduce the service as a means of providing fast and efficient services, and financial institutions of all sizes are busy assessing their place in the mobile banking world. Consequently, it has created a playing field for competitors comprising of not only banks but also telecommunication companies (Feig, 2007).

Porteous (2006) argues that the penetration of retail banking systems in most African countries is very low and that although there are no reliable figures yet that exist for the proportion of people who are banked at the continental level, various national household surveys conducted in selected countries including Kenya show that within a decade or less of rollout of mobile phones as many or more people have these gadgets as have bank accounts even though the latter have been available for much longer. As unbanked people start to use mobile phones they become reachable at a lower cost and therefore more bankable in the sense that a basic transactional service becomes more viable to offer via the phone.

Some of the services being offered by banks through the mobile banking platform include account inquiry such as checking balance and statement inquiry, funds transfer between accounts, bill payments, statement request, cheque book requests and airtime top-up (Njenga, 2011). These services are offered in menu form where the different options are listed and identified by numbers and the user selects the number corresponding to the service that he/she wants.

There are different factors which play a vital role in the adoption of these relatively new services. These factors could be social, economic or technological. Some of the social factors identified include conceptualizing electronic money, the social context of transactions, awareness, attitude towards change (embracing new technology), trust in ones bank or service provider, convenience of the service and the comfort that people have in using these services. Economic factors include mobile phone access, cost of the service, marketing strategies and availability of alternatives. Technological factors include service availability and reliability, security and privacy concerns, ease of use, network coverage, handset operability and availability of the service on different mobile networks (Venable Telecommunications, 2008).

This fast-paced phenomenon is however, not devoid of challenges which are experienced by both the customers and the banks themselves. Some of the challenges experienced by customers include handset operability challenges, security concerns and availability on different mobile networks. The banks may experience challenges such as network

coverage, integration with other systems, adoption and diffusion levels, threat of substitutes in the financial industry (competition), scalability and reliability of the service and regulatory challenges (Porteous, 2006). According to a study conducted by Njenga (2011), the demands of a vibrant mobile banking market revolve around improved network coverage, quality connections and reduced costs. Hence he concluded that these form part of the challenges which mobile banking service providers may need to address.

1.1.2 The Banking Industry in Kenya and Mobile Banking

The banking industry has come a long way in ensuring its survival having experienced increased competition over the last few years arising from increased innovations among the players and new entrants into the financial market, through the provision of mobile banking services. One of the biggest challenges being faced by banks in Kenya is stiff competition from the most unexpected quarters: the telecommunication industry, mainly Safaricom. This is because while banks have been struggling to attract more customers to bank with them for quite a while, Safaricom launched the M-Pesa in 2007 and within a relatively short period it already has more than 10-million users and is providing many poor and rural Kenyans with access to financial services that were previously out of reach, because either banking services were too expensive for them or were almost inaccessible. With M-PESA, customer's money can only be accessed through mobile technology (Ivatury & Mas, 2008). Hence, the banks had to find ways to compete effectively and profitably, and started coming up with their own mobile banking solutions and forming partnerships with these telecommunication service providers.

There has since been a rapid growth in the adoption of mobile banking by the commercial banks in Kenya in recent years, evidenced by the numerous advertisements in the media on the various mobile banking services being offered by these banks. For instance, the major advertisements by banks seen in the media include Barclays Bank of Kenya's Hello Money, Kenya Commercial Bank's Mobi-bank, Co-operative Bank of Kenya's M-Banking, Equity Bank's M-Kesho and Eazzy 247, Family Bank's Pesa Pap, National Bank's SIM-ple banking, Commercial Bank of Africa's M-Shwari just but to mention a few. Some of the services being offered include transfer of funds from bank account to

mobile phone account like M-Pesa, airtime top-up, change of mobile banking PIN, banking services like account inquiry which includes balance inquiry and mini statement inquiry, funds transfer between accounts both own and other people's accounts, cheque book request, bill payment and viewing linked accounts, just but to mention a few.

These services are offered in partnership with the telecom companies, the telecoms providing the mobile banking platform and their services embedded in the bank's mobile banking services as well. For instance, most of the services mentioned above like M-Kesho and Hello Money are linked to M-Pesa, thus allowing customers to transfer funds from their bank accounts to M-Pesa.

1.2 Statement of the Problem

Around the globe, various initiatives use the mobile phone to provide financial services, not only to those without access to traditional banks but also to the banked population. Yet relatively little scholarly research explores the use of these mobile banking/mobile payments systems (Donner and Tellez, 2008). Scholarly research on the adoption and socioeconomic impacts of mobile banking systems in the developing world is scarce because the systems are so new (Maurer, 2008). Even less attention has been paid to the social, economic, and cultural contexts surrounding the use of these systems. In addition, even the few researchers who have conducted research in mobile banking have come up with different conclusions on the most important factors influencing its adoption.

Sulaiman et al (2007) argue that the personal characteristics of mobile banking users are important determinants of their adoption decisions, and that understanding customer perceptions of mobile banking services will enable service providers to plan their marketing strategies. McGee (2009) argues that a consumer's propensity to use mobile devices to conduct banking functions depends on the sophistication of the device and not the consumer's age, and that users with smart phones are more likely to use the devices for mobile banking than those with ordinary cell phones. Porteous (2006) argues that as unbanked people start to use mobile phones they become reachable at a lower cost and therefore more bankable in the sense that a basic transactional service becomes more viable to offer via the phone, hence his emphasis is on cost.

Besides calling for attention to this gap in the research literature and emphasizing the need for research focusing on the context(s) in which mobile banking systems are used, this study seeks to explore the extent of adoption of mobile banking among bank employees, since they are also bank customers and are the first to be exposed to mobile banking services being offered by the banks they work for before these services are rolled out to the public, by attempting to reveal the myriad social, technological, and economic influences on adoption and use of these new systems.

1.3 Research Questions

The following are some of the questions which the study will seek to address:

i. What are the services being offered by banks through mobile banking?
ii. How frequently do bank employees use mobile banking?
iii. What is the extent of adoption of mobile banking services among bank employees in Kenya?
iv. What factors influence or affect mobile banking adoption among bank customers in Kenya?
v. Which challenges do they face in using mobile banking?
vi. How do bank customers perceive mobile banking compared to traditional banking in terms of preference?

1.4 Objectives of the study

This study has the following objectives:

i. To establish the extent of adoption of mobile banking services among bank customers.
ii. To establish the factors affecting adoption of mobile banking services among bank customers in the Kenyan banking industry.
iii. To determine the challenges these employees face in the mobile banking adoption process.

1.5 Value of the study

This study will be useful in a number of ways. In particular the study will assist economic planners and policy makers in the public sector to understand the factors which influence mobile banking adoption and its impact on people's lives. This will help them in formulating policies which will encourage technological innovations as well as adoption in a bid to reduce the poverty levels in the country.

In addition, it will assist players in the mobile banking market to understand the factors influencing and challenges affecting mobile banking adoption hence enable them to come up with better services than the existing ones and assist researchers and students of information technology in gaining understanding of the current trends in mobile technologies and their impact. This study will also add to the foundation of knowledge being laid for research in mobile banking technologies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Mobile Banking

Mobile banking has been defined by Porteous (2006) as a subset of electronic banking in which customers access a range of banking products, such variety of savings and credit instruments, via electronic channels. According to Venable Telecommunications (2008), mobile banking can be defined as financial transactions that are based on wireless handsets. They also argue that finance encompasses a wide range of services and products which are of interest to financial services institutions, including mobile banking, mobile payments or funds transfers and mobile commerce, the common element being a handheld wireless device which the customer uses to initiate a transaction. Hence, it involves accessing and providing banking and financial services through a mobile device with the help of mobile telecommunication devices. Mobile banking today is most often performed via SMS or the Mobile Internet, providing two different types of customer account access: a web-based interface and a simple text messaging interface. This therefore means the customer can bank virtually anywhere anytime.

Mobile banking uses a technology referred to as Electronic Data Interchange (EDI). EDI refers to computer to computer exchange of data sent in a form that allows for automatic processing with no manual intervention. It is usually carried out over specialist EDI networks (Lucey, 2005). The use of EDI is widespread especially in finance, banking and retailing. The most common application of EDI in banking is Electronic Funds transfer EFT. This is a well established specialized application where computer users send electronic data to their bank giving instructions to make payments or transfer funds between accounts. It is used for paying suppliers, paying salaries etc. An international funds transfer system known as SWIFT (Society for Worldwide Interbank Financial Telecommunications) also exists.

2.2 Mobile Banking Adoption

Mobile banking adoption can be examined using the Technology Adoption Life Cycle (TALC) which describes how new ideas and technologies spread in different cultures. According to TALC the stages by which a person adopts an innovation includes awareness of the need for an innovation, decision to adopt or reject the innovation, initial use of the innovation to test it and continued use of the innovation. Through these stages diffusion is accomplished. There are five different categories of adopters namely innovators, early adopters, early majority, late majority and laggards. Innovators are those people who want to be the first to try the innovation, are interested in new ideas and are willing to take risks. Early adopters are people who represent opinion leaders; they enjoy leadership roles, embrace change opportunities and do not need convincing for them to change. Early majority adopt new ideas before the average person but they typically need to see the innovation work before they are willing to adopt it. Late majority are people who are skeptical of change and will only adopt an innovation after it has been tried by the majority. Laggards are bound by tradition and are very conservative, hence they fear innovation (Rogers, 2013).

The adoption of mobile banking has been gradually increasing with the rapid increase in the use of mobile or wireless handsets in the recent past. Studies conducted in the early 2000 showed that European countries including Scandinavian countries, France, UK, Ireland and Germany, alongside Canada and Japan were among the leaders in mobile banking. In some Asian countries (Singapore and Malaysia) mobile banking penetration was on the increase whereas Australia and New Zealand were among the slow adopters. There was no reference to Africa considering it is a developing continent and mobile banking was still very new in the technology world. However, other studies conducted in mid 2000s showed that mobile banking had grown faster in Sub-Saharan Africa than in most other parts of the world within a relatively short time, and was expected to continue increasing (International Telecommunications Union, 2005).

According to Karjaluoto (2002), the first targets for mobile banking applications were consumers in the developed countries. By complementing services offered by the banking system such as cheque books, ATMs among others, the mobile platform offers a convenient additional method for managing money without handling cash. For users in the developing world on the other hand, the appeal for mobile banking may be less about the convenience and more about accessibility and affordability. Generally, mobile banking systems in the developing world enable users to do three things: store value in an account accessible via the handset, convert cash in and out of the stored value account and transfer stored value between accounts.

2.2.1 Mobile Banking Adoption Models

There are a number of mobile banking models which are evolving and are being adopted by the mobile banking service providers. These models are differentiated based on various issues such as who will establish the customer relationship or who is legally responsible for the deposit, the bank or the non-bank/telecommunications company that is in terms of account opening, handling deposits and lending; whose brand is most exposed to the public; where can the cash be accessed; who carries the payment instructions in terms of whether the service is tied to a particular network or is network independent and basically the nature of agency agreement between the bank and the non-bank agent. However, no matter what business model, if mobile banking is being used to attract low-income populations in often rural locations, the business model will depend on the banking agent, that is the retail outlet that will process the financial transaction on behalf of the bank (Porteous, 2005).

Porteous (2005) has defined mobile banking using models which he has categorized as Bank-focused (pure bank-driven), Joint Venture (bank-led), Non Bank-led and Non bank-driven.

The bank-focused model emerges when a traditional bank uses non-traditional low-cost delivery channels to provide banking services to its existing customers. Examples range from use of automatic teller machines (ATMs) to internet banking or mobile phone

banking to provide certain limited banking services to the bank's customers. This model is additive in nature and may be seen as a modest extension of conventional branch-based banking. An example is Equity Bank's Eazzy 247 mobile banking service which allows the user to access bank services using a mobile phone.

In the Joint Venture model the customer conducts financial transactions through a mobile phone instead of at the bank's branches. This model promises the potential to substantially increase the financial services outreach by using a different delivery channel (retailers/ mobile phones), a different trade partner having experience and target market distinct from traditional banks, and may be significantly cheaper than the bank-based alternatives. The model may be implemented by using correspondent arrangements between the bank and a non-bank agent. In this model customer account relationship rests with the bank. Some examples of usage of this model include M-Kesho offered by Equity bank, M-Banking services offered by the Co-operative Bank of Kenya, Hello Money offered by Barclays Bank, M-Shwari offered by the Commercial Bank of Africa, SIM-ple banking offered by the National Bank of Kenya, Mobi-bank offered by the Kenya Commercial Bank and Mobile Banking offered by Standard Chartered Bank.

The non-bank-led model is where a bank has a limited role in the day-to-day account management and sometimes may not even come into the picture, and the non bank agent performs all the transactions. Typically the role of the bank in this model is limited to safe-keeping of surplus funds. Account management functions are conducted by a non-bank agent who has direct contact with individual customers. Safaricom's M-Pesa uses this model to allow customers to withdraw money from their M-Pesa accounts at some bank ATMs. The other mobile service providers are also expected to adopt this model in offering the same service as they are yet to roll them out.

The Non-bank driven model is where the non-bank agent effectively becomes the depository entity through the issuance of e-money. Account ownership and transactions management is done purely by the telecommunication companies. This model is used by Safaricom's M-Pesa, Airtel's Airtel Money, Orange's Orange Money and Yu's Yu Cash through their contracted agents.

These differences can be summarized using the following table:

Table 1: Mobile Banking Models

Model Name	**Bank-focused**	**Joint Venture (Bank-led)**	**Non-Bank led**	**Non-Bank driven**
Who holds the deposit	Bank	Bank	Bank	Non-bank
Whose brand is dominant	Bank	Joint-non bank agent	Non-bank dominant	Non-bank
Where can cash be accessed	Bank	Bank	Bank and alternative agent network	Non-bank
Who carries the payment instructions	Any Non-bank agent	Specific to one non-bank agent	May be one or any	Specific to offering telco
Examples	Eazzy 247	M-Shwari, M-Kesho	M-Pesa ATM withdrawal.	M-Pesa, Airtel Money, Yu Cash

Table Adopted from Porteous (2006) pp 27

2.2.2 Mobile Banking Adoption Levels in Kenya

Mobile phone operators have identified mobile banking systems as a potential service to offer customers, increasing loyalty while generating fees and messaging charges (Donner and Tellez, 2008). In Kenya, this can be linked to Safaricom's M-Pesa and Airtel's Airtel Money. Financial institutions, which have had difficulty providing profitable services through traditional channels to poor clients, see mobile banking as a form of "branchless banking", which lowers the costs of serving low-income customers. A good example in Kenya is Equity Bank whose target market is the low income earners. Government regulators see a similar appeal, but are working out the legal implications of the

technologies, particularly concerning security of mobile transactions (Ivatury & Mas, 2008).

According to McGee (2009), consumer's propensity to use mobile devices to conduct banking functions depends on the sophistication of the device and not the consumer's age. Indeed, mobile users with smart phones are more likely to use the device for mobile financial services than users with ordinary cell phones or even devices with full keyboards regardless of age. This argument thus implies that in Kenya, given the economic conditions of people majority of who live below the poverty line, most people are not likely to adopt mobile banking in the real sense. This is because majority of those who can even afford cell phones have the ordinary cell phones.

Sulaiman et al (2007) argue that the personal characteristics of mobile banking users are important determinants of their adoption decisions. This provides the financial services industry with a better understanding of customer perceptions of mobile banking services and helps them plan their marketing strategies and promotion approaches for mobile banking services in the future. The new services offer a way to move money from place to place and present an alternative to the payment systems offered by banks, remittance firms etc. The uptake of mobile banking has been particularly strong in Kenya where nearly 2 million subscribers registered with Safaricom M-Pesa system within a year of its nationwide rollout in 2007 (Ivatury and Mas, 2008). It is argued that over 10 million have registered to date with this alternative version of mobile banking services.

2.3 Factors Affecting Mobile Banking Adoption in Kenya

New technology and innovation is believed to present risk for many customers, hence they react differently based on their innate characteristics, the wants and the needs of their companies and the behavior of other buyers. Adoption of innovation therefore depends on relative advantage, compatibility, complexity, triability and observability of the innovation (Rogers, 2013). There are several other factors which have been identified by various researchers as affecting mobile banking adoption and they can be categorized into social, economic and technological factors. Donner and Tellez (2008) have given examples of social and economic factors which influence the dynamics of mobile

banking and affect technology adoption. Some of the social factors include conceptualizing electronic money, the social context of transactions, awareness, attitude towards change (embracing new technology), trust in ones bank or service provider, convenience of the service and the comfort that people have in using these services. Economic factors include mobile phone access, cost of the service and availability of alternatives. Technological factors include service availability and reliability, security and privacy concerns, ease of use, network coverage, handset operability and availability of the service on different mobile networks. Other factors fronted propose that mobile banking usage patterns appear to be largely driven by personal missions and marketing strategies of service providers (Njenga, 2011)

2.3.1 Social Factors

Conceptualizing electronic money refers to how comfortable people are with electronic money. Donner and Tellez (2008) argue that people coming to banking for the first time via the mobile handset require a command of abstract concepts about invisible or virtual money. Beliefs, misunderstandings, habits, and concerns must be addressed if people who are used to storing money in cash are asked to store it "in" a handset. It may therefore, be quite a task convincing them that the handset will operate like a wallet thus affecting mobile banking adoption. Hence, adoption will depend on how comfortable a person is with virtual money. Rogers (2013) points out that people react differently to innovation based on their perceived risk of that innovation.

In the social aspect of economic transactions factor there is a long list of social or contextual influences on mobile banking use. Both macro-level cultural factors and micro-level, locally-negotiated norms in families and among peers—particularly about money—are at play. For instance, a person would certainly and very comfortably transfer money to a family member as a gift; however they would not do so with an acquaintance as a loan. Technically, the actions are the same. Socially, they are miles apart (Donner and Tellez, 2008).

Attitude towards change is another factor which affects mobile banking adoption. The personal characteristics of mobile banking users determine their adoption decisions (Sulaiman, 2007). For instance, customers or users encouraged by the greater ease and convenience of managing their money are becoming more sophisticated. Also customers who are savvier are more likely to take control of their money. Hence, as their confidence develops they are more likely to exploit the flexibility of mobile banking. Attitude can also be looked at from the perspective of age of the users. Technology may seem daunting to older people, it is therefore widely assumed that older people are more reluctant or rigid in adopting new ways of doing things including technology. Therefore this attitude may affect their adoption of mobile banking (Monitise, 2008).

Convenience of mobile banking services also plays a major role in the adoption of these services. The fact that most people if not all carry their handsets with them wherever they go means that it would be easier for a customer to access some banking services via the handset than having to look for the bank's nearest branch to be able to do the same transaction. Mobile banking offers a convenience like no other service as it means banking anywhere anytime. This convenience is what may attract customers to adopt mobile banking.

2.3.2 Economic factors

Cost can be looked at in terms of the price of the service and affordability, ongoing costs as well as cost of the handset. This refers to how much the customer incurs to access the service and to do the actual transactions. According to Rosenberg (2010), customer usage of mobile banking is influenced not only by absolute prices but by the way a service is priced. For example, in order to encourage trial of money transfers, some services offer free deposits, which make branchless banking an affordable way to save. Some of the banks mobile solutions may provide 'free' services with the only charge being that of the telecoms service provider. For instance, while accessing the service a customer will be charged a small fee in form of airtime and perform account inquiry and transfer funds between accounts in the same bank free of charge. Hence, depending on how much cost the customer incurs in performing all the required transactions it may determine whether

that customer can afford it or whether he is willing to pay that much for it, thereby affecting adoption of the services.

Marketing strategies may also play a role in the adoption of mobile banking. According to Njenga (2011), usage patterns of mobile banking are largely driven by marketing strategies employed by the service providers and that some users adopt mobile banking out of excitement and the image created by marketers about mobile banking utilization, which makes them believe it is fashionable. Communicability of the product benefits and promotional effort are also factors which should be considered when developing marketing strategies if persuasion is to be achieved. In addition, different categories of adopters require different marketing strategies (Rogers, 2013).

Availability of alternatives and existing payment mechanisms may also affect mobile banking adoption. A large proportion of the volume of mobile banking transactions may reflect existing transactional relationships, shifted over to new channels. There are significant benefits of cost, reliability, safety, flexibility, and immediacy associated with mobile banking systems. However, it is important for the industry players, researchers and policy makers understand the transactional networks and behaviors that already exist (Goro, 2003). According to Rogers (2013), the rate of adoption is influenced by among other factors the relative advantage of the innovation which refers to the degree of the perceived benefits over alternative products or services.

2.3.3 Technological Factors

Handset operability refers to how easy it is to access mobile banking services using a particular handset device. There are a large number of different mobile phone devices which are operated in different ways, some use touch screens others use the qwerty keyboard, but at the end of it are required to perform the same role. This could affect adoption of mobile banking in that it may be difficult for a user to perform some services under mobile banking, for example adding a beneficiary during a funds transfer transaction, because probably the type of characters required to be entered as the beneficiary name may not be supported by the mobile device that the user has. This also

poses a big challenge for banks to offer mobile banking solution on any type of device. Some of these devices support Java ME and others support SIM Application Toolkit, a WAP browser, or only SMS. Therefore, the type of mobile phone can either support mobile banking applications or not. Also it takes about six months for a new handset user to find everything on their phone, therefore this could also affect adoption in that for as long as the user does not know how to access some features he/she may not be able to take advantage of some of these services (Monitise, 2008).

Security of financial transactions, being executed from some remote location and transmission of financial information over a network, could also influence mobile banking adoption in that a user may feel that performing transactions via a mobile phone is not secure and that there is no privacy over wireless networks. This may be fuelled by the increasing rates of fraud, hacking and phishing that are being reported worldwide. Hence, security and privacy issues are the most complicated challenges that need to be addressed jointly by mobile application developers, wireless network service providers and the banks' IT departments to make users feel more comfortable thereby increasing adoption levels (Venable Telecommunications, 2008). The security aspects which need to be addressed include Security of any thick-client application running on the device, authentication of the device with service provider before initiating a transaction, User ID or Password authentication of the bank's customer, encryption of the data being transmitted over the network and encryption of the data that will be stored in device for later or off-line analysis by the customer.

Reliability and service availability are also factors which could influence adoption of m-banking. With mobile banking, customers access the service from anywhere anytime. This therefore requires the banks to ensure that the systems are up and running throughout. Banks unable to meet performance and reliability requirements may lose customer confidence. For instance, if a user tries to access the service and most of the time the service is unavailable, it means that user will lose confidence with the m-banking service and maybe even with the bank totally and this might decide to give up on the service completely (Venable Telecommunications, 2008).

Availability on other networks may also affect adoption of mobile banking services in that different customers use different mobile phone networks for different reasons and most customers would want to access mobile banking on the network of their choice. However, this will depend on the platforms that the banks use, most of them use only one network provider, for instance, Safaricom, hence customers who are on Airtel, Yu or Orange may not be able to access these important services. Thus, the customer is left with the choice of either purchasing a SIM card for the network being used by the bank or simply ignoring the service altogether. Integration of mobile banking services on different networks and platforms therefore will determine the availability of this service to a wide range of users hence affecting adoption (Venable Telecommunications, 2008).

2.4 Challenges Facing Mobile Banking

The mobile banking industry is not devoid of challenges experienced by both the users and the service providers, in this case banks. Some of the challenges include security, integration, regulatory challenges.

Security is the biggest challenge facing the mobile banking world. The use of wireless technology creates a risk that information will be stolen, therefore service providers have to employ the use of highly secure encryption technology to prevent third party data intrusion and losses. Venable Telecommunications (2008) argue that the ubiquitous tools of mobile banking open the door to enormous potential for monetary as well as reputation risk, hence mobile banking service providers have to provide security which is commensurate with the size of the financial institution as well as the complexity of the products and services offered. The mobility of the mobile handset and the nature of wireless communications make it difficult to authenticate a customer, hence this becomes a security concern as well for both the banks and their customers.

Integration is one of the main problems for established banks in that the new technology must link efficiently with their existing systems and they must ensure that the new ideas and people necessary (designers, e-commerce specialists, security people, etc) are managed properly. Banks that want to make mobile banking available to all of their

customers must deal with four or more wireless carriers to initiate even the simplest mobile transaction.

Threat of substitutes and competition also pose a big challenge in the mobile banking industry. Mintzberg and Quinn (1991) define substitutes as those products that appear different but can perform the same function as another product. New entrants into the market have heightened competition for consumer deposits, increasing competition also resulting from the fact that non depository and non financial institutions are beginning to offer services directly substitutable for those provided by commercial banks (Goro, 2003). Such institutions include micro finance organizations, Saccos and most recently mobile service providers such as Safaricom and Airtel in Kenya.

Regulatory challenges in mobile banking are yet to be sorted out. Mobile banking technology is still in a developmental stage, so is the legal and regulatory framework governing these services. Current regulations do not cater for new technologies; the regulators have to deal with issues of security and taxation of the new innovations springing up.

2.5 Conceptual Framework of the Study

This study borrowed some concepts from the Technology Acceptance Lifecycle (TALC) and Diffusion of Innovation Theory by Everett Rogers. According to Rogers (2013) the rate of adoption depends on factors such as perceived benefits over alternative products, communicability of the product benefits, price and on going costs, ease of use, perceived risks and compatibility with existing standards and values. He also argued that new technology presents risk for many customers and that they react differently based on their innate characteristics. These factors were grouped among other factors into social, economic and technological categories.

The dimensions of each independent variable which were identified were therefore classified as follows: **Social factors** here included convenience of the service, attitude of mobile phone users towards embracing new technologies (personal characteristics), social aspect of the transaction and the comfort that people have in using these services.

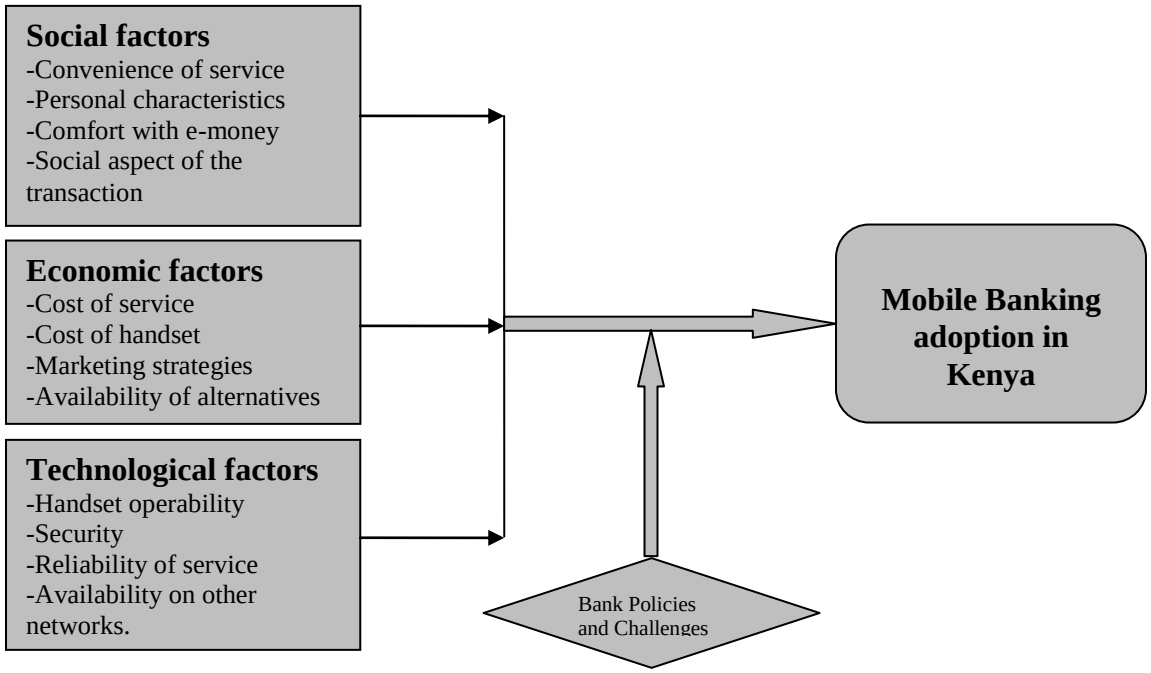
Economic factors included cost and affordability of the service, cost of the handset, marketing strategies and availability of substitute services or products in the market (competition). **Technological factors** included service availability, reliability, security and privacy issues, handset operability and ease of use of the services, and availability on other networks.

The dimension of the dependent variable of the study is the extent of adoption of mobile banking services among bank employees in the top five banks in Kenya.

The moderating variables will include the banks' policies and challenges faced by the bank employees. Bank policies may play a big role in influencing uptake of these services in that some banks may make it mandatory for their employees to sign up for these services whereas others may not, but instead use persuasion to convince them to sign up.

The relationships between the variables can be illustrated as follows:

Figure 1: Factors associated with adoption of mobile banking services in Kenya



Source: Author

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents a discussion of the research methodology that was used to address the research questions.

3.2 Research Approach

This study used a descriptive research design involving multiple case studies of selected banks because it was the best suited for gathering descriptive information; where the researcher wanted to know about people's feelings, attitudes or preferences concerning one or more variables through direct query, hence determining the relationship between the independent and dependent variables (Kotler, 2001). A model was first developed in the literature review section based on theoretical research and then tested by conducting case studies of the selected sample population.

3.3 Population of the Study

The population of the study was all employees of the top five commercial banks in Kenya in Nairobi, namely Kenya Commercial Bank (KCB), Barclays Bank, Standard Chartered Bank, Co-operative Bank and Equity Bank in Kenya. These banks were selected because they were among the first to roll out mobile banking, have a wide customer base and perform well financially.

3.4 Sample Size

The study sample comprised of 500 bank employees, 100 employees drawn from each bank ranging from junior staff to management. It was necessary that the approached respondents comprised both mobile banking savvy employees and those who were not. This was achieved by randomly selecting the respondents.

3.5 Data Collection Method

Quantitative approach was applied during the collection of data using questionnaires consisting of Likert scales and closed-ended questions, randomly distributed to the identified banks' head offices and branches; through identified contact persons. The first

section, styled Section A, of the questionnaire consisted of demographics (general information about the respondents) which comprised of age, gender, education, income, job position, registration status and source of influence to sign up for mobile banking for those who had registered. Section B was divided into three questions, the first and second questions targeting those who had signed up for mobile banking, while the third question targeted mostly those who had not signed up although it was open to all respondents. The first question dealt with the services being offered under mobile banking by the different banks and how frequently they were used. This was collected using the time frequency scale: Never, Seldom, Sometimes, Often and Always. The second question dealt with the factors which supported the adoption of mobile banking and how important they were in influencing the respondents to sign up, and this data was collected using the importance scale: Unimportant, Of little importance, Moderately important, Important and Very Important. The third question dealt with challenges faced during mobile banking adoption and this was collected using the scale: No hindrance, A little hindrance, Some hindrance, Considerable hindrance and Great hindrance. Section C provided data which was used in the regression analysis.

3.6 Data Analysis Technique

Data that was collected was quantitative. Data analysis was conducted using descriptive statistics, which included frequency, mean, standard deviation, range, standard error of the mean and sum. Important statistical tools including Chi-square and Cross-tabulation were applied with the help of Excel and Statistical Package for Social Scientists (SPSS) software to analyze the data and draw conclusions. Analyzed data was presented in form of tables, charts and graphs. The dependent variable was measured to see if and how much it varied as the independent variables vary.

The following regression model was used to establish the factors affecting the adoption of mobile banking:

$y_i = a_0 + a_1x_1 + a_2x_2 + a_3x_3 + e_i$ where;

y is mobile banking adoption among bank employees,

a_0 is the y intercept (value of y when x is 0), it will show the extent of adoption in the absence of any factors,

x_1 represents social factors,

x_2 represents economic factors,

x_3 represents technological factors,

a_1, a_2 and a_3 represent the slope which will show the relationship between the social, economic and technological factors respectively and the extent of adoption of mobile banking,

e is the error which will show whether the analysis has captured a strong or weak relationship between the factors and the extent of adoption.

Assumptions: Time is constant (the services were launched around the same time) and the respondents have information about the mobile banking services being offered by their banks.

CHAPTER FOUR: DATA ANALYSIS AND INTEPRETATION OF FINDINGS

4.1 Introduction

This chapter consists of empirical data presentation and discussion presented under the respondents' demographics, the services being offered under mobile banking and how frequently they are used by bank employees, factors positively affecting or supporting mobile banking adoption by employees of the top five banks and the challenges facing both the users of theses services as well as hindering those who have not yet signed up.

4.1.1 Response Rate

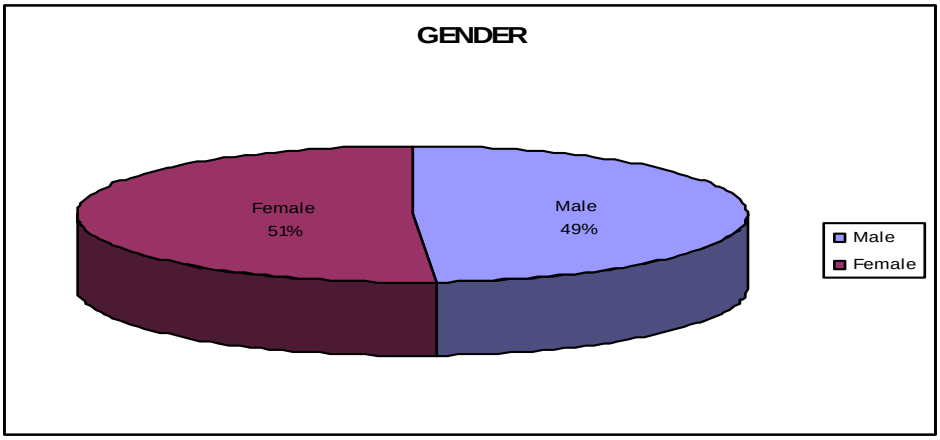
This study had a sample size of 500 respondents. Out of these, 332 responses were obtained. This represents a 67% response rate.

4.2 Respondents Demographics

The researcher requested the respondents to provide their personal details which included age, gender, education level, income level, registration status and cause of registration (influence to register).

4.2.1 Respondents' Gender

Figure 2: Respondents' Gender



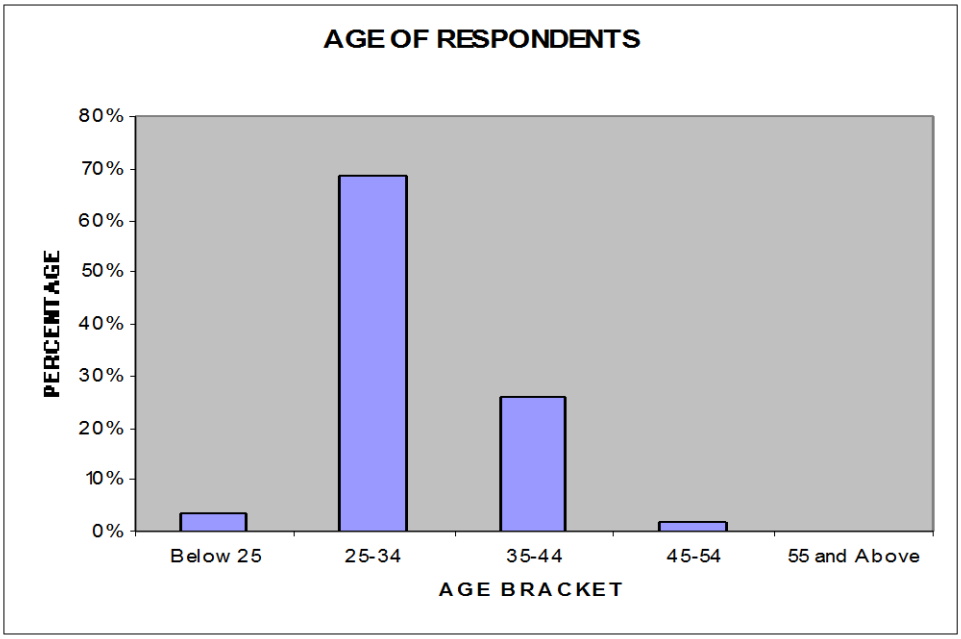
Source: Author (2013)

According to the findings 48.8% of the respondents indicated that they were male while 51.2% indicated that they were female. This shows that majority of the respondents were female.

4.2.2 Respondents Age

The researcher provided age brackets and requested the respondents to select the bracket they belonged to. The results are as shown in Figure 3 below:

Figure 3: Respondents' Age



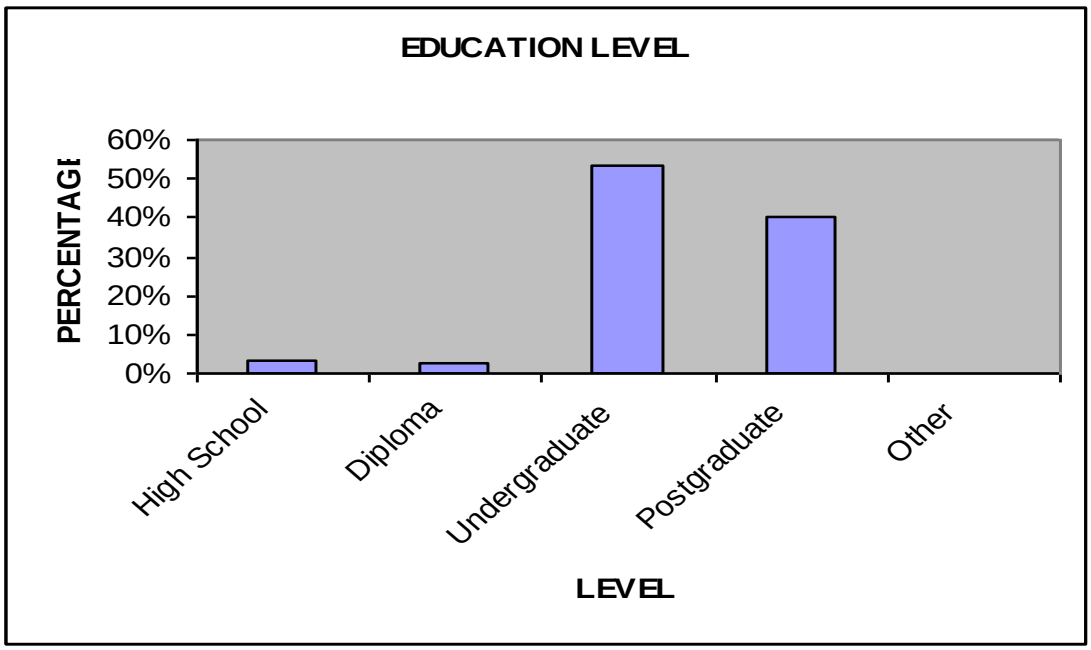
Source: Author (2013)

According to the findings 3.6% of the respondents indicated that they were below 25 years, 68.7% were aged between 25 and 34 years, 25.9% were aged between 35 and 44 years and 1.8% were aged between 45 and 54 years. There were no respondents who indicated that they were 55 years and above. We can therefore conclude that most of the respondents were within the economically active population between 25 and 44 years.

4.2.3 Respondents' Educational Level

The respondents were also requested to indicate their educational level and the responses were as shown in Figure 4 below:

Figure 4: Respondents' Educational Level



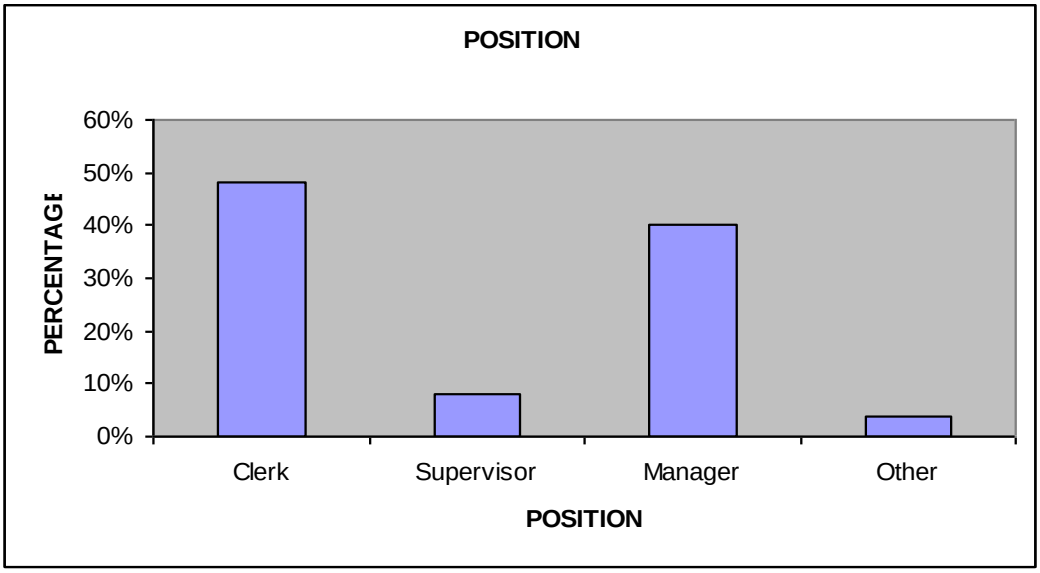
Source: Author

From the findings 3.6% of the respondents indicated that they had High School education, 2.4% indicated that they had Diploma education, 53.6% indicated that they had Undergraduate (Bachelor's degree) education and 40.4% indicated that they had Postgraduate degree education. We can therefore deduce that majority of the respondents were educated.

4.2.4 Respondents Job Position

The researcher further requested the respondents to indicate their job levels and the responses were as shown in Figure 5 below:

Figure 5: Respondents' Job Position



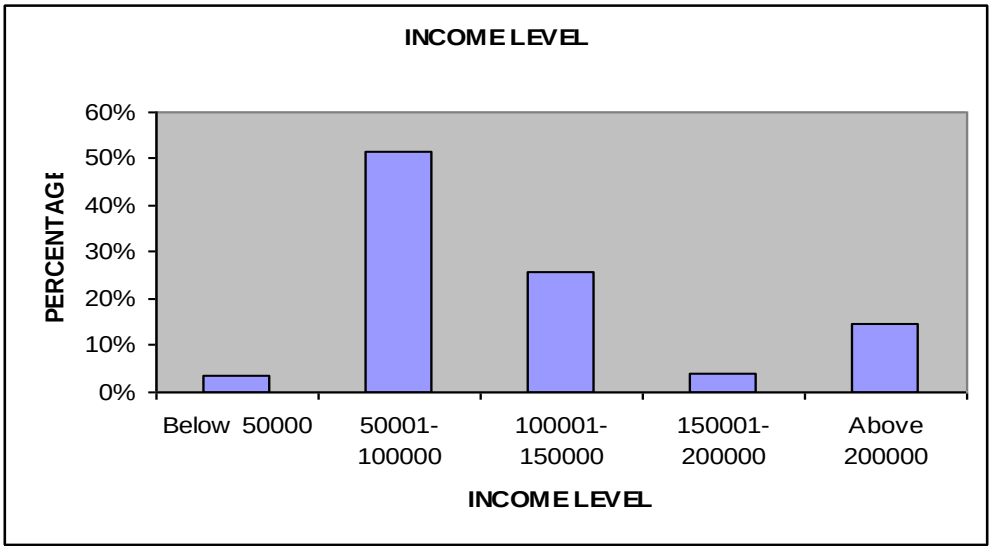
Source: Author (2013)

From the responses 48.2% of the respondents indicated that they were clerks, 8.1% indicated that they were Supervisors, 40.1% indicated they were Managers and 3.6% held other positions which were not specified. From this we can thus conclude that majority of the respondents were Clerks and Managers.

4.2.5 Respondents' Income Level

The respondents were requested to indicate their income levels. From the responses 3.6% indicated that they earned below 50k, 51.5% indicated they earned between 50k and 100k, 25.9% indicated they earned between 100k and 150k, 4.2% earned between 15k and 200k while 14.8% indicated they earned above 200k. The responses were represented using Figure 6 below:

Figure 6: Respondents' Income Level

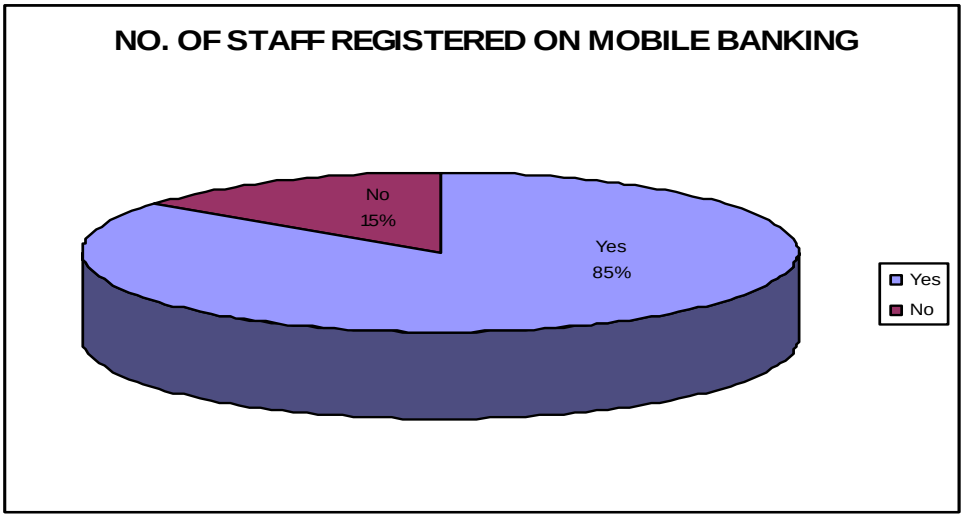


Source: Author (2013)

4.2.6 Respondents' Registration Status

The respondents were also requested to indicate whether they had registered for mobile banking or not and the responses were as shown in the Figure 7 below:

Figure 7: Respondents' Registration Status



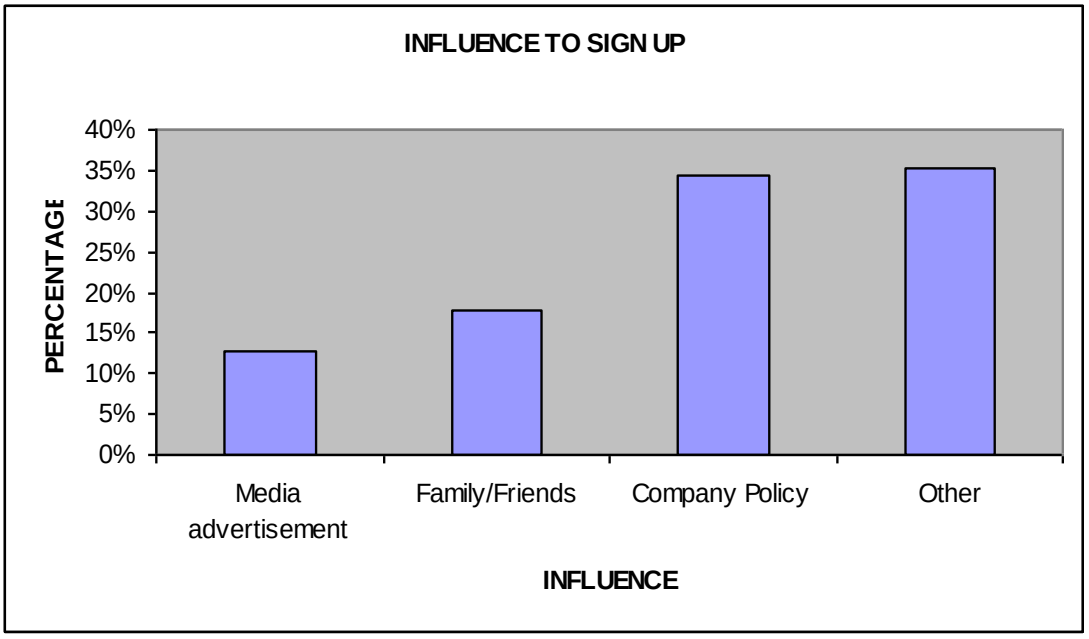
Source: Author (2013)

From the responses 85.2% of the respondents indicated that they had registered on mobile banking while 14.8% indicated that they had not registered for mobile banking services. This clearly shows that most of the respondents were registered users of mobile banking services offered by their banks.

4.2.7 Respondent's Influence to Register For Mobile Banking

The respondents were further requested to specify what influenced them to sign up for mobile banking services and the responses were as shown in Figure 8 below:

Figure 8: Influence to Sign Up



Source: Author (2013)

According to the responses from those who had signed up for mobile banking, 12.7% indicated that they were influenced by media advertisements to sign up, 17.7% indicated that they were influenced by family and friends, 34.3% indicated they were influenced by company policy and 35.3% indicated they were influenced by other sources some of which included personal decision to sign up. This, therefore, shows that company policy and other different reasons had the greatest influence on the respondents' decision to sign up.

4.2.8 Demographic Differences in Mobile Banking Service Adoption

Generally, the results from analysis of demographics in relation to adoption of mobile show that the majority of those employees who had registered for mobile banking were undergraduate clerks aged between 25-34 years, earning between 50,001-100,000 who were influenced by company policy and other personal reasons to sign up for mobile banking. There was however, no significant difference in terms of gender.

4.3 Adoption of Mobile Banking Services

Understanding the frequency with which certain services provided under mobile banking are used by customers is important and provides useful feedback for management of banks. This is because it could give an indication whether the service is meeting customer needs or not, whether customers know how to use the particular service and simply whether it adds value providing it or not. To measure frequency of use of mobile banking services, employees were asked to rate how frequently they used the services ranging from never to always on a numerical scale of 1-5. The results of the respondents rating were as shown in the table below:

Table 2: Mobile Banking Services and Frequency of Use

	Services	**Never**	**Seldom**	**Sometimes**	**Often**	**Always**
SV1	Balance Inquiry	16.6%	17.0%	24.4%	7.8%	34.3%
SV2	Statement Inquiry	19.8%	39.2%	24.7%	2.8%	13.4%
SV3	Transfer of funds to other bank accounts	62.5%	11.3%	15.2%	5.3%	5.7%
SV4	Transfer of funds to M-Pesa	4.9%	11.7%	12.7%	25.1%	45.6%
SV5	Purchase airtime	5.3%	11.0%	18.7%	20.5%	44.5%
SV6	Bill Payments	17.0%	30.7%	19.4%	13.4%	19.4%
SV7	Statement Request	66.8%	20.1%	7.1%	0.0%	6.0%
SV8	Cheque Book Request	58.3%	17.7%	12.0%	0.0%	12.0%
SV9	Loan application	82.3%	12.0%	5.7%	0.0%	0.0%
SV10	Other services (please specify)	0	0	0	0	0

Source: Author (2013)

The responses were analyzed using the measures of central tendencies and dispersion (mean, mode and standard deviation) to show the services used most frequently by customers and presented as follows:

Table 3: Mobile Banking Services Ranked In Order of Use

	Service	Mean	Mode	Std deviation
SV4	Transfer of funds to M-Pesa	3.53	5	1.737
SV5	Purchase airtime	3.43	5	1.766
SV1	Balance Inquiry	2.83	5	1.763
SV6	Bill Payments	2.54	2	1.621
SV2	Statement Inquiry	2.15	2	1.423
SV8	Cheque Book Request	1.72	1	1.459
SV3	Transfer of funds to other bank accounts	1.64	1	1.309
SV7	Statement Request	1.38	1	1.118
SV9	Loan application	1.08	1	0.658

Source: Author (2013)

From the results in Table 3 above it can be deduced that Transfer of funds to M-Pesa is the most frequently used service while loan application is the least used. This information is important in that it could be used by management to determine whether the least used services add any value or to embark on a fact finding mission from customers on their opinion of the services, and make the relevant decisions.

4.4 Factors Affecting Adoption of Mobile Banking Among Bank Employees

It is important for mobile banking service providers to understand the factors which influence or affect the adoption of mobile banking in order to be able to provide services which meet the customers' expectations and needs. Bank employees were also requested to rate how important the identified factors were in influencing their decision to sign up for mobile banking ranging from Unimportant to Very important on a numerical scale. The results of the responses were as shown in the table below:

Table 4: Factors Influencing/Affecting Mobile Banking Adoption

	Factors Influencing Mobile Banking Adoption	Unimportant	Of little importance	Moderately important	Important	Very important
F1	Convenience	7.8%	9.4%	0.0%	12.7%	70.0%
F2	Cost	25.7%	11.7%	21.5%	23.5%	17.6%
F3	Security	25.4%	6.8%	10.7%	22.8%	34.2%
F4	Reliability of Service	7.8%	11.1%	14.3%	32.6%	34.2%
F5	Comfort with virtual money	12.7%	0.7%	15.3%	46.9%	24.4%
F6	Handset operability (ease of use of handset)	8.5%	11.7%	10.7%	22.5%	46.6%
F7	Knowledge of the services	14.3%	5.9%	9.4%	19.5%	50.8%
F8	Others (Please specify)……	0	0	0	0	0

Source: Author (2013)

The responses were analyzed and ranked as represented in the table below to determine the importance that customers place on various factors when making the decision to adopt mobile banking:

Table 5: Rank of Importance of Factors in Mobile Banking Adoption

	Factors	Mode	Mean	Std deviation
F1	Convenience	5	3.95	1.691
F7	Knowledge of the services	5	3.58	1.732
F6	Handset operability (ease of use of handset)	5	3.58	1.644
F4	Reliability of Service	5	3.46	1.559
F3	Security	5	3.08	1.777
F5	Comfort with virtual money	4	3.42	1.524
F2	Cost	1	2.73	1.594

Source: Author (2013)

From Table 5 we can deduce that most customers attach so much importance to convenience and the least importance to cost as shown by the ranking. This, therefore, may imply that the cost of mobile banking which includes cost of the service or transaction costs and cost of the mobile handsets may not have a significant impact on customers' decision to sign up for mobile banking.

4.5 Challenges Facing Mobile Banking Adoption

Understanding the challenges faced by customers in mobile banking provides useful insight into reasons why customers may not be using or signing up for mobile banking services as expected by the mobile banking service providers. These challenges may indicate shortcomings in the services being provided or challenges on the customers themselves. Therefore, services providers are better placed to improve their services, how they package these services, and how they present them to the customers. Some customers' decisions to adopt a product or service are determined by their perception of the product. The respondents, both registered and unregistered were therefore asked to rate how the identified challenges impacted on their mobile banking adoption process. The responses are represented in the table below:

Table 6: Challenges Facing Mobile Banking Adoption

	Challenges	**No hindrance**	**A little hindrance**	**Some hindrance**	**Considerable hindrance**	**Great hindrance**
CH1	Cost	53.6%	16.9%	17.2%	5.4%	6.9%
CH2	Reliability of service	55.1%	6.9%	6.9%	14.5%	16.6%
CH3	Handset operability	78.6%	12.7%	3.9%	4.8%	0.0%
CH4	Security	66.0%	24.7%	0.9%	0.0%	8.4%
CH5	Availability of substitutes	54.8%	12.7%	6.3%	14.5%	11.7%
CH6	Restrictions of the service	44.6%	25.3%	16.6%	5.7%	7.8%
CH7	Accessibility on different networks	54.5%	17.8%	0.0%	12.7%	15.1%
CH8	Other challenges (Lack of Interest)	93.1%	0	0	0	6.9%

Source: Author (2013)

The responses were analyzed and ranked to determine the challenges which hinder customers the most, and were as represented in the table below:

Table 7: Rank of Challenges Hindering Adoption of Mobile Banking

	Challenge	Mean	Mode	Std. Deviation
CH2	Reliability of service	2.3	1	1.614
CH5	Availability of substitutes	2.16	1	1.493
CH7	Accessibility on different networks	2.16	1	1.545
CH6	Restrictions of the service	2.07	1	1.243
CH1	Cost	1.95	1	1.245
CH4	Security	1.6	1	1.128
CH3	Handset operability	1.35	1	0.772
CH8	Other challenges (Lack of Interest)	0.36	0	1.297

Source: Author (2013)

From the results above, reliability of service was ranked as having the greatest hindrance on mobile banking adoption, followed by availability of substitutes which included other services like M-Pesa and accessibility on different networks. Handset operability was ranked as having the least hindrance on the adoption process. There was an additional challenge or hindrance specified as lack of interest in mobile banking, which was highlighted by mostly those who had not signed up for the service. This information is important as it can be used to improve the existing services by addressing the challenges and make mobile banking more appealing to customers and ease their experience of these services.

4.6 Level of Mobile Banking Adoption in Relation to Factors

Regression was done to determine how the level of adoption varied with factors influencing adoption which was represented by the number of registered respondents on mobile banking and the results tabulated.

Table 8: Regression analysis of level of mobile banking adoption and factors influencing adoption

	Variables	**t**	**Standardized Coefficients**	**Sig.**
RQ1	Convenience	27.126	.865	.000*
RQ2	Cost of service	1.853	.050	.065
RQ3	Conceptualizing e- money	10.022	.295	.000*
RQ4	Handset operability	-8.016	-.190	.000*
RQ5	Cost of handset	-7.524	-.142	.000*
RQ6	Social aspect of transaction	11.563	.275	.000*
RQ7	Availability on different networks	-4.219	-.094	.000*
RQ8	Reliability	-7.550	-.216	.000*
RQ9	Security of transactions	1.426	.043	.155
RQ10	Security of service	-6.046	-.169	.000*
RQ11	Availability of alternatives	-3.816	-.090	.000*
RQ12	Marketing strategies	2.324	.107	.021*
RQ13	Attitude towards change	.810	.034	.418

*Significant at 0.05

Adjusted R^2 0.89 (F = 207.98, df = 13, 318, sig. = 0.000)

The overall model used was significant for the selected banks as shown by the values (F = 207.98, df = 13, 318, sig. = 0.000). The implication of this is that all the variables collectively impact the level of adoption of mobile banking. The table also indicates that the overall model is significant. Specifically, the regression shows that out of the 13 variables (factors) 10 factors significantly affect the level of adoption. These variables

are: Convenience (RQ1) which increases the chance of a bank employee adopting mobile banking by 87%, Conceptualizing e-money (RQ3) which increases this chance by 30%, Handset operability (RQ4) which, according to the negative sign, shows that it could decrease chances of adoption by 19% in case it becomes difficult, and Cost of handset (RQ5) which also could decrease adoption by 14% if it becomes a challenge as indicated by the negative sign. Other variables include Social aspect of transaction (RQ6) which contributes 28%, Availability on different networks (RQ7) which could affect adoption by 9% if it becomes a challenge, Reliability of service (RQ8) which could negatively affect adoption by 22% and Security of service (RQ10) which could also negatively affect adoption by 17% in its absence. Availability of alternatives (RQ11) is also very significant and could affect adoption by 9%, while Marketing strategies (RQ12) which is also significant contributes 11%.

The remaining three factors Cost of service (RQ2), Security of transactions (RQ9) and Attitude towards change (RQ13) are not significant at the 0.05 level of confidence. From the table above, it can be seen that these factors do not contribute much to the adoption of mobile banking by bank employees; they do not significantly affect adoption. RQ2 increases chances of adoption by 5%, RQ9 contributes 4% while RQ13 contributes 3%.

The t values in the table show the ratio between the mean values for the respective variable and the standard error mean. This means that a high t value for a variable suggests that the variable does not support the null hypothesis of this study, while a low t value suggests that the mean for the variable is smaller and could support the null hypothesis depending on the significance. For instance, the t values for RQ4, RQ5, RQ7 and RQ8 are negative values but they are still significant at $p<0.05$. This means that although their standard means were small they do not support the null hypothesis. The null hypothesis in this study is that the given variables do not support the adoption of mobile banking among bank employees.

This finding is consistent with studies such Rogers (2013) who found that usage of innovations are largely driven by perceived benefits of the innovation over available alternatives, in this case the benefit being convenience.

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a discussion of the key findings, conclusions drawn from the findings and makes appropriate recommendations. The conclusions and recommendations drawn were aimed at addressing the objective of evaluating the level of adoption of mobile banking among bank customers, and the factors influencing and challenges facing the adoption process.

5.2 Summary of Findings

From the five banks which were sampled, employees mostly used mobile banking to transfer funds from their bank accounts to M-Pesa and to purchase airtime. With M-Pesa being the leading form of mobile banking in Kenya provided by a non-banking institution: a telecommunication company, it has a wider reach to customers. This service option therefore provides customers with the flexibility of being able to load their M-Pesa accounts straight from their accounts for onward transfer to other people as intended.

It was found out that among the factors identified as influencing or affecting mobile banking, convenience (F1) was rated as the most important factor with 70% of the respondents rating it as very important, followed by knowledge of the services (F7) and handset operability (F6). This means that awareness of the services and how to navigate through the available menus (access) were key factors in determining adoption decisions by customers. During the study it was found out that these services were accessible to most phones through USSD codes, for example *224# for Barclays bank, because most of the phones in Kenya were just basic phones with basic facilities hence USSD was the most suitable for these phones. However, it was also discovered that the banks are now developing applications of these services for customers who have higher version phones, commonly called smart phones. It was also noted that the employees did not attach much importance to cost of the service (F2), this was because the cost of mobile banking service offered by the banks was more or less the same as that being offered by the

telecommunications companies, if not cheaper. For instance, it was found that some banks charge as little as Kshs 20 to transfer funds from the customer's account to their M-Pesa account, and as little as Kshs 5 to access the mobile banking service and perform other enquiries.

Among the challenges that were identified, it was found that Reliability (CH2) was the greatest hindrance to mobile banking owing to the fact that for some of the banks their services were inaccessible at times. This, it was discovered during the study, was affected mostly by the telecommunication platforms being used by the banks to provide the service, such that if the telecommunication lines were down at any one time then the service becomes inaccessible. Availability of substitutes (CH5) and Accessibility on different networks (CH7) were also rated highly as impediments to mobile banking adoption. For CH5 it was found that most customers feel that the mobile banking services offered by their banks were not significantly different from the ones offered by the telecommunication companies, and given that the ones provided by telecoms were already in existence before banks rolled out theirs hence gained more popularity. As for CH7 it was found that most banks offer their mobile banking services on only one network, mostly Safaricom, hence locking out customers with Airtel or Orange sim cards.

5.3 Theoretical Implications of the Research

Previous studies have examined the factors that affect mobile banking adoption and come up with varying conclusions on the most influential factors (Sulaiman et al, 2007; Njenga, 2011; Rosenberg, 2010). This study contributes to the global body of knowledge on the factors which affect innovation adoption in an emerging economy, specifically Kenya, considering this is a relatively new innovation and the uptake in developing countries has surpassed that of developed countries. In addition, the study increases knowledge to the banks of reasons why their employees may not be signing up for the services yet they are expected to be the ambassadors of these services to customers as they aim for 100% take up of these services.

5.4 Recommendations and Managerial Implications

This study has unveiled important information regarding adoption of mobile banking services, the services which customers feel add value to them, those which they feel are not important and the challenges they face when using or when making the decision to sign up for mobile banking.

It is recommended that the management of these banks and other service providers re-evaluate their mobile banking services and embark on a fact finding mission to find out from their customers the services which they would like to have access to via mobile banking, so that whatever solutions they come up with will be more enticing to customers and encourage them to sign up. It is also recommended that service providers address the challenges highlighted so as to give customers a worthwhile experience when taking up this innovation because the benefits of mobile banking are yet to be fully explored beyond convenience.

5.5 Conclusion

In conclusion, this study sought to find out the factors that affect mobile banking adoption and challenges hindering 100% sign up of mobile banking by bank customers. Through existing literature and empirical evidence, the study concludes that most customers sign up for mobile banking because of the convenience it offers, and also rely on their knowledge of the services. It is also concluded that in as much as this is an emerging economy where cost is considered as an important factor in provision of goods and services, in mobile banking adoption cost is not an important factor neither is it a hindrance, meaning the service is reasonably affordable; customers are willing to pay for the convenience it offers.

It is also concluded that the factors which were being measured in this research had a significant impact in influencing adoption decisions.

5.6 Recommendations for Future Research

This study may not have exhausted all the factors that could influence innovation adoption decisions as the factors highlighted account for 89% influence. It is therefore recommended that further research be done to unveil the other factors. Further research could also be done to evaluate how mobile banking contributes to paperless banking, whether it has any impact on internet banking and how it can be integrated or interlinked with internet banking, considering the current vision for banks is to go paperless and branchless. This will help banks to determine whether they are heading in the right direction in adopting technological innovation to achieve their goals and visions of branchless banking.

REFERENCES

Chaffey, D. (2003). *Business Information Systems*. FT Prentice Hall.

Donner, J. & Tellez, C. (2008). Mobile Banking and Economic Development: Linking Adoption, Impact and Use". *Asian Journal of Communication*, 318-322.

Feig, N. (2010). *Bank Systems and Technology Journal: Living in Limbo*. San Diego: The Grand Del Mar.

Goro, R.W. (2003). *Strategic Responses of Commercial Banks to the Threat of Substitute Products*. Nairobi, University of Nairobi.

Ivatury, G., & Mas, I. (2008). *The Early Experience with Branchless Banking*. Washington, DC: CGAP.

Karjaluoto, H. (2002). Selection criteria for a mode of bill payment: Empirical investigation among Finnish bank customers. *International Journal of Retail & Distribution Management*, 331-339.

Kothari, C. R. (2004). *Research Methodology: Methods and Techniques.* India: New Age.

Kotler, P & Armstrong, G. (2001). *Principles of Marketing*. Prentice Hall.

Lucey, T. (2005). *Management Information Systems*. London: BookPower.

Maurer, B. (2008). *Retail Electronic Payments Systems for Value Transfers in the Developing World*. Retrieved 1st September 2012, from Department of Anthropology, University of California, Irvine from http://www.anthro.uci.edu/faculty_bios/maurer/Maurer-Electronic_payment_systems.pdf

McGee, B. (2009). *Mobile Banking: Mobile Banking Adoption driven by Device not by Age.* Retrieved 29th August 2012 from http://brandonmcgee.blogspot.com/2009/04/mobile-banking-adoption-driven-by.html

Mintzberg, H.and Quinn, J.B. (1991). *The Strategy Process: Concepts, Contexts and Cases.* Prentice Hall.

Njenga, A.D.K. (2011). *Mobile Phone Banking: Usage Experiences in Kenya.pdf.* Retrieved 9th April 2013.

Porteous, D. (2006). *The Enabling Environment for Mobile Banking in Africa*. London: DFID.

Rogers, E. (2013). *Diffusion of Innovations*. Free Press. Retrieved 10th August, 2013 from http://www.amazon.com/gp/aw/d/0743222091/ref=mw_dp_mpd/....

Rosenberg, J. (2010). *Access to Finance, Customer Adoption, Innovation and Mobile Banking*. Retrieved 29th August, 2012 from http://technology.cgap.org/category/geography/kenya/....

Sulaiman, A., Jafaar, N.I. and Mohezar, S. (2007). An Overview of Mobile Banking Adoption Among the Urban Community. *International Journal of Mobile Communications*, Vol. 5, No.2, 157-168.

Venable Telecommunications and Financial Services, (2008). *Mobile Banking.* White Paper of November 2008. Retrieved 29th August 2012 from http://www.venable.com/files/Publication/3188a11e-fbaa-45fe-a7be-0089cd384c3c/Presentation/PublicationAttachment/52cc19ac-dd18-4cf6-b471-0863ee93a47d/2010.pdf

Zhengh, L. and Zhong, Y., (2005). The Adoption of Virtual Banking in China: An Empirical Study. *Chinese Business Review*, Vol.4, No.24, June.

http://www.equitybank.co.ke/index.php/self-service/mobile-banking/eazzy-247

http://ke.kcbbankgroup.com/ways-to-bank/detail/kcb-mobi-bank-mobile-banking/

http://www.standardchartered.co.ke/personal-banking/24hr-express-banking/mobile-banking/en/

APPENDICES

APPENDIX I: QUESTIONNAIRE

PREAMBLE

Dear respondent, the information sought in this questionnaire relates to adoption of mobile banking by bank employees. This is an academic research and the information will be used for academic purposes only. Kindly provide as much information as requested and be sincere. Your response is highly appreciated.

SECTION A: PERSONAL DETAILS

a) Bank: Barclays Bank □ KCB □ Standard Chartered □

Equity □ Co-operative Bank □

b) Age: Below 25 □ 25-34 □ 35-44 □ 45-54 □

55 and Above □

c) Gender: Male □ Female □

d) Education level: High School □ Diploma □ Undergraduate□

Postgraduate□ Other □ (please specify)……

e) Income level: Below 50,000 □ 50,001-100,000 □ 100,001-150,000□

150,001-200,000 □ Above 200,000 □

f) Registered on Mobile banking: Yes □ No (Proceed to Section B question 3)□

g) Influenced to sign up by: Media advertisements □ Family/Friends □

Company Policy □ Other □ (please specify)…

……

SECTION B: MOBILE BANKING SERVICES

1. On a scale of 1 to 5 please state how often you use the following services on average in a month, by ticking the appropriate box, where 1- Never, 2 - Seldom, 3 – Sometimes, 4 - Often, 5 – Always

	1	2	3	4	5
a) Balance Inquiry					
b) Statement Inquiry					
c) Transfer of funds to other bank accounts					
d) Transfer of funds to M-Pesa					
e) Purchase airtime					
f) Bill Payments					
g) Statement Request					
h) Cheque Book Request					
i) Loan application					
j) Other services (please specify)…… …… …….... …… ……					

2. Please rate how important the following factors were in influencing your uptake of mobile banking services by ticking the appropriate box, where 1 – Unimportant, 2 – Of little importance, 3 – Moderately important, 4 - Important, 5 – Very Important.

	1	2	3	4	5
a) Convenience					
b) Cost					
c) Security					
d) Reliability of Service					
e) Comfort with virtual money					
f) Handset operability (ease of use of handset)					
g) Knowledge of the services					
h) Others (Please specify)…… …… …… …… ……					

3. Please rate how the following factors have hindered your uptake of mobile banking services by ticking the appropriate box, where 1 – No hindrance, 2 – A little hindrance, 3 – Some hindrance, 4 – Considerable hindrance, 5 – Great hindrance

	1	2	3	4	5
a) Cost					
b) Reliability of service					
c) Handset operability					
d) Security					
e) Availability of substitutes					
f) Restrictions of the service					
g) Accessibility on different networks					
h) Other challenges (Please specify) ……					
……..					
…….....					
……..					
……..					
……..					

SECTION C: ADDITIONAL QUESTIONS

Please answer the following by ticking the appropriate option:

1. Do you find using mobile banking more convenient than using the branch-based services?

   Yes □ No □

2. Do you find mobile banking offered by your bank to be more expensive than other mobile banking services like M-Pesa?

   Yes □ No □

3. Do you feel comfortable transacting through mobile banking as opposed to dealing with physical cash?

   Yes □ No □

4. Did your mobile phone support mobile banking at the time you signed up or the service? If yes please proceed to question 6. If no please proceed to question 5.

   Yes □ No □

5. Did you have to purchase a phone that supports the service?

   Yes □ No □

6. Does your income influence your use of mobile banking?

   Yes □ No □

7. Is your bank's mobile banking service available on more than one network?

   Yes □ No □

8. Do you find mobile banking to be more reliable than branch based services?

   Yes □ No □

9. Do you find using mobile banking to perform transactions to be more secure rather than performing them at the branch?

   Yes □ No □

10. Are there any security concerns that have been raised concerning your bank's mobile banking services?

    Yes □ No □

11. Would you prefer to use your bank's mobile banking services rather than those provided by your mobile network provider e.g. Safaricom, Airtel etc?

    Yes □ No □

12. Do you find your bank's advertisements on mobile banking appealing or interesting enough to encourage customers to sign up?

    Yes □ No □

13. Does your attitude towards change (how you perceive change) affect your use or uptake of mobile banking?

    Yes □ No □

Thank you for your co-operation.