

**FACTORS AFFECTING MOBILE BANKING IN  
COMMERCIAL BANKS, IN THIKA TOWN**

**BY**

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DECLARATION

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

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

The rapid development of mobile technology has affected the banking industry globally. Studies have shown the usefulness of mobile banking in facilitating the financial transactions between banks and their customers (Laurin, 2005). Assertions have been made that many western research entities still stick to the thought that mobile usage remains the preserve of the somewhat well off (Tiwari & Buse, 2007). Wallage (2005) argues that the big benefit for mobile banking in African countries is that a good number of those players have little or no existing business in Africa, and see mobile banking as an opening rather than a threat, to their business models.

There is a growing partnership between financial institution and non-financial service providers where consumers use services such as mobile banking, to transact and clear utility bills through shared IT platforms. Banks and other financial institutions have moved to mobile banking in their efforts to cut costs while maintaining reliable customer service (Mosota, Okiba, & Nyang'au, 2015). It had been alleged that more than 32 million households in Kenya used mobile banking in 2012 (Mosota et al, 2015). However, as the industry embraces these new opportunities they have to contend with issues and face challenges that arise in the context of banking risks.

The strategic choice that a bank makes in response to the issues and challenges of mobile banking, will determine the future of the bank since mobile banking is the way forward in reducing costs and remaining competitive. The main question was, how to establish it without severe organizational problems. In Kenya there has been low uptake of mobile banking and there is a clear gap in identifying why uptake has been slow. Here mobile banking refers to using a mobile device to access financial services from the bank (Petrova, 2002)



### **1.1.1. Mobile banking**

Mobile banking, sometimes referred to as m-banking or m-commerce, is a form of branchless banking. Mobile banking is defined as the use of mobile phones, Personal Digital Assistants (PDAs), or other portable devices connected to telecommunications networks, to facilitate banking services such as money transactions/transfers, and other financial services linked to customer bank accounts (Diniz, Albuquerque, & Cernev, 2011). A mobile payment, on the other hand, involves a customer, "...paying for a product or service using mobile technology" (International Telecommunications Union, 2011). Many scholars separate mobile banking from mobile money transfers. Without the enabling framework of a mobile banking system, mobile payment services would not exist, as they rely on the same banking instruments and value accounts that mobile banking systems operate on.

### **1.1.2. Mobile Banking Utilization**

Globally, mobile banking utilization is widely accepted. Lee (2009) from Korea investigates factors affecting trust in satisfaction with mobile banking in Korea. He looks at three quality factors, namely system quality, information quality and interface design and how these affect customers' trust and satisfaction. In China, mobile banking is widely accepted, and there is evidence of high growth in electronic banking. It has the potential to develop into a world scale internet economy (Laforet & Li, 2005).

In Africa, several studies have been done on mobile banking. Donner (2008) discusses research approaches to mobile use in the developing world and some of the key barriers in adopting services. Lack of infrastructure and fixed lines have led to mobile device being a crucial mode of communication, and has a huge impact on the welfare of the people in poorer countries. In Tanzania for example 97% of the population live in the mobile foot print (Taylor & Francis, 2008).

In Kenya, mobile funds transfer came about in 2007 when Mpesa was launched, and have continued to grow exponentially since then (Kimenyi, 2009). Mobile banking started with the creation of services by banks which could be accessed through the mobile phone. Mobile banking allows financial institutions to offer financial services outside traditional

bank premises. Njenga (2008) asserts that the transformational mobile banking is made available by mobile service providers as part of their value added services. Mobile banking is embedded among other services within the service providers' menu. The perceived difference between mobile service providers mainly lies on the quality and scope of services as well as the pricing strategy.

In Kenya, the local telecommunication companies offer services such as M-shwari. This is a platform that allows mobile users to earn interest through their mobile bank accounts. Users can not only deposit and withdraw money, as they can with M-Pesa, they can also access a host of services that are traditionally reserved for bank account holders (Gupta, 2013). A Kenyan farmer can now check his account balance, receive pre-qualified personal accident insurance, or apply for short-term loans all without having to walk long distances to their nearest bank branch (Central Bank of Kenya, 2008). Statistics show that about one billion in payment per month is done via mobile banking which is 31% of Kenya's GDP.

The general objective of this study is to look at factors affecting utilization of mobile banking, and their impact on commercial banks in Kenya. The main factors that will be discussed are: technology, usability, security, and cost. Technology will include interface design (Laurin, 2005). Usability was to include the use of applications, and drill down facilitation that may be deterrents to local users (Pedersen, Methlie & Thorbjornsen, 2002). Security was to cover the perceived risk (Mohammed & Kathy, 2008). Lastly, cost will include phone cost, and cost of transacting (charged by the bank and by the mobile service provider).

Commercial banks in Kenya have faced challenges in managing customers expectations when it comes to service provision. The long queues specially for the local large commercial banks, difficulty in the customer, accessing information on their accounts both for information purpose and for simple transactions has seen most commercial banks adopt mobile banking. Commercial Banks in Kenya also wish to tap to the unbanked population and are using this tool to reach out to customers who are have a hard time accessing their branch network. Banks have faced some challenges in trying to adopt this new technology including and not limited to high cost of IT system acquisition, mobile

platform systems compatibility with core banking system, customer awareness on features available with the new service is also a challenge. Security and ease of use of the technology has been some of the issues some banks have raised .

## **1.2 Problem Statement**

Mobile banking has the potential to be transformational owing to various factors like existing infrastructure and target markets (Polasik, 2008). Despite its numerous benefits, mobile banking acceptance amongst banking customers is yet to meet competitive expectations (Donner & Tellez, 2008; Laukkanen, 2007; Kleijinen et al, 2007). Several studies have been done in Korea (Chung & Kwon, 2009) and China (Wang et al, 2010), but little research has been done in developing countries. A study on factors affecting adoption of mobile banking in Pakistan, with special focus on the unbanked low income population in Pakistan established social influence as the most significant factor in the intention to adopt mobile banking (Kazi, 2013).

In Africa Tchouassi (2012) studied if mobile phones really work to extend banking services to the unbanked, taking empirical lessons from selected Sub-Saharan Africa countries. He found that the level of mobile phone utilization impacts on bancarisation. When mobile utilization increases, bancarisation increases at a rate of 46.8%. Other factors identified to impact on mobile banking utilization include technology, economic innovation, policy and regulations.

In Kenya banks have invested heavily in mobile banking to tap into the unbanked population. The latter are using mobile services like M-pesa and Airtel Money, provided by Safaricom and Airtel respectively. Rapid adoption of mobile banking services by banks is an ongoing trend that is slowly gaining momentum (Njenga, 2008). Despite these investments, mobile banking utilization is below expectation. This is due to lack of interest from the general public. Many clients still opt for more cumbersome and costly methods of banking such as queuing for services in the banking hall. Thus banks are still experiencing overload of repetitive and cumbersome work from the long queues (Brown, 2003).

Several studies have been conducted on mobile banking. These include the challenges being faced by commercial banks in Kenya in terms of their Information Systems (Otieno, 2008), the diffusion of ICT in the informal sector in Kenya (Gikenye, 2012), and the evaluation of security of Information Systems in Kenya specifically in the banking industry (Kiemo, 2009). Kiemo looked at the impact of changing one's core banking system and its direct relation to performance in commercial banks. However there is no study that has looked at the factors that affect full utilization of mobile banking in Kenya. The closest to this was a study comparing existing mobile banking services in Kenya with similar services in other countries (Njenga, 2008). A similar study was also done by Mutua(2008) on effects of mobile banking on performance of commercial banks again the study results were focused on financial performance and not on customer experience. Thus, it is against this background that this researcher aims to establish some of the factors that affect the utilization of mobile banking, and their impact on commercial banks in Kenya.

### **1.3. Objectives of the Study**

The specific objectives of the study includes:-

- i. To establish how the four factors, technology, security, usability and cost are affecting the utilization of mobile banking in Kenya;
- ii. To find out how mobile banking utilization has impacted commercial banks in Kenya;
- iii. To identify challenges facing mobile banking in Kenya, and make recommendations on the way forward.

### **1.4. Value of the Study**

This study was important to the following interest groups:

By understanding the major factors that hinder the utilization of mobile banking, the results was to help the bank managers to prioritize their mobile banking initiatives and allocate adequate resources effectively and consequently improve their mobile banking solutions.

Mobile service providers like Safaricom, Airtel and Orange were to use the study findings to understand the bottlenecks the banks face in implementing mobile banking technology and co-ordinate their efforts to solve the problems that hinder the implementation of mobile banking.

Users of mobile handsets will gain a better understanding of the challenges the banks have to undergo through in implementation of mobile banking. In addition, the public who are the customers were to have the opportunity of enjoying better services at low costs, convenience and high security.

Research findings were to make a great contribution to the world of academia; researchers in the area of mobile phone banking and other payments systems was to use the findings as a point of reference in their literature reviews.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Mobile Banking

Mobile banking technology has been embraced by most if not all of the commercial banks in Kenya to aid in increase of revenue streams and increase channels in which the banks can earn revenue .However, uptake of this service has not been as anticipated and the study wants to focus on impact of this technological innovation in commercial banks in Kenya and evaluate the customer experience.The three theories we are to discuss may address some of the reasons as to why mobile utilization is low despite the huge capial outlay banks have invested to avail these services .

Asfour & Haddad (2014) did a similar study in Jordan.Results showed that there is a statistically significant impact on overall dimension of mobile banking on customer E satisfaction.Privacy and accessibility are more influential comparing to other dimesions. In Pakistan a similar study was done to determine the relationship between customer satisfaction and mobile banking adoption.The findings that utilization of the service goes up if the consumers trust that the system is secure, seems reliable and timely.(Rashid & Saleem,2011).

#### 2.1.2 Mobile Banking Models

There are two main business models to consider when implementing a mobile banking system, the bank-led model; and the non-bank model. It is important to note that the two types of business models listed above can be implemented using a variety of service providers, regulatory agents, and facilitators. How a particular model is implemented greatly depends on how a country wants to establish a mobile banking system and the volume and coverage a particular bank wishes to have (Chemonics International, 2010).

The bank-led model at its most basic form, is as an extension of conventional branch-based banking. Like conventional banking practices, when a bank-led, mobile banking model is adopted, the customer account relationship rests with the bank. This relationship can vary,

depending on what type of arrangement has been predetermined between the bank(s), retail agents, and other partners. In addition, the bank-led model offers consumers access to the same core financial functions, including the ability to check account balances, make deposits, process transactions, and the opportunity to extend credit. This model differs from conventional branch-based banking in the sense that consumers are no longer forced to access bank services or facilitate financial transactions at a bank branch. Instead, consumers are provided with an opportunity to remotely conduct financial transactions using a whole range of agents or mobile technologies. Moreover, if a bank chooses to adopt a bank-led, mobile banking model, it can utilize these alternative delivery channels to flexibly and inexpensively increase its outreach without having to build new bank branches or hire more employees (Ivantury & Mas, 2008)

An example of bank-led model locally is M Co-op Cash, by the Co-operative Bank of Kenya. This solution allows their customers to access a variety of banking services such as money transfer and payment services. A national identification card and a registered mobile number are required. One can deposit/save, send money from one Co-operative Bank account to another, use paybill, buy airtime, pay school fees, apply for loans amongst other uses (Co-operative Bank of Kenya, 2014).

The non-bank-led mobile banking model does not vary significantly from the bank-led model. In this model, however, a bank does not actively participate in the mobile banking sector, except possibly as a regulator. Instead, non-banks, such as telecommunication service providers, retailers, and other third party agents, promote and provide mobile banking services to customers (Chemonics international, 2010). A good example is M-Shwari, as earlier mentioned in this study.

## **2.2 Theoretical Anchorage**

Several theoretical approaches exist that address the study of mobile banking utilization. For purposes of my research three theories have been focused on namely Diffusion of Innovations, Technology acceptance model (TAM ) and Social Shaping of Technology. The three are discussed below:

### **2.2.1 Diffusion of Innovations**

Diffusion of Innovations is the process by which an innovation is communicated through certain channels over time among the members of a social system. It can be regarded as a multidisciplinary theory that has been widely used to explain information system adoption research. There are five primary factors that have impact on the rate of adoption according to the theory: 1) relative advantage, 2) complexity, 3) compatibility, 4) trialability, and 5) observability (Rogers, 1995).

It is widely established that the diffusion of innovations theory is a powerful tool and gives solid theoretical background for explaining the adoption of mobile technologies including electronic payments (Szmigin & Bourne, 1999) mobile commerce (Teo & Pok, 2003), and mobile banking (Lee, 2003). It has been pointed out that three of the factors mentioned above have greater importance in adoption of IS system: comparative advantage, complexity and compatibility (Tornatzky & Klein, 1982). It has further been argued that the other two: trialability and observability are focusing on the learning mechanisms. This theory is related to our context in that it gives incites on some perceived factors that are affecting utilization of mobile banking. When there are system delays and where the user interface is complex and not easy for a lay man to comprehend. Mobile banking utilization will be low even for registered users. When customers are allowed to test and try mobile platforms and observe its benefits they tend to take up the same more confidently and utilize the same frequently.

### **2.2.2 Technology Acceptance Model, TAM**

There are a great number of researches exploring TAM as a framework to examine how end users accept information system. Some researchers have claimed TAM is more suitable for studying the diffusion and acceptance of certain technology within an origination instead of studying such diffusion to individual users.

Nevertheless, the two constructs: perceived usefulness and perceived ease of use have been proved to be two important factors that determinate users 'intention to apply certain technology. Those two factors were proved to be important for the spread of mobile commerce (Wu & Wang, 2005). Perceived usefulness is defined as the degree to which a



person believes that using a particular system would enhance his or her job performance (Davis, 1989). Davis identified fourteen items clustered in three groups: job effectiveness, productivity and time savings, and importance of the system to one's job. The other component, perceived ease of use refers to the degree to which a person believes that using a particular system would be free of effort. Similar to the perceived value, also the ease of use was clustered into three groups. The identified clusters distinguish the ease of use in terms of physical effort, mental effort, and the personal expectation experience of the system's ease of use.

The Technology Acceptance Model (TAM) has been widely used to explain what factors users would consider to accept a new technology. It introduced the influence of the perceived ease of use and the perceived usefulness of a technology on the users' attitudes towards using the technology and subsequently on the actual usage. Most of the research in technology acceptance was done on technologies that were introduced into organizations and could therefore only partially describe the completely voluntary usage of technologies such as the mobile service by independent end users. Only recently the technology acceptance theory was applied to mobile services. TAM has been used as research framework for many studies in the field of mobile telecommunication.

### **2.2.3 Social Shaping of Technology**

Social shaping of technology can be explained as social factors influencing the utilization of mobile commerce (Bhatti, 2007). Empirical data from regression analysis reflects users ease of use influence behavioral intention to adopt mobile commerce. There is a litany of social/contextual influences on mobile banking/m-payments use. Both macro-level cultural factors and micro-level, locally-negotiated norms in families and among peers particularly about money are at play (Zelizer, 1994). For example, respondents in focus groups conducted in Manila explained that, while they would certainly transfer money to a family member, they would not do so to an acquaintance. Technically the actions are the same; socially they are miles apart (Donner, 2007).

Practitioners and policymakers are already concerned about validating m-transactions under conditions of sharing behavior, in which two people use the same handset. On the

other hand, others suggest that mobile banking / mobile payments systems may alter patterns of money sharing within families by giving women greater autonomy and control over household savings (Reijswoud, 2007).

### 2.3.Factors Affecting the Mobile Banking Utilization

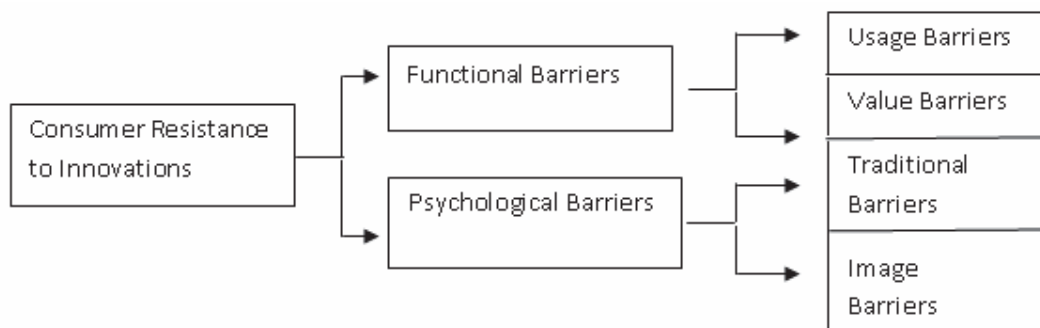
Some of the factors that affect the optimal adoption of mobile banking services include: technology, usability, security, and cost.

#### 2.3.1 Technology

The different mobile devices available in the local market should have hardware architecture and operating systems that can support the banking applications. The current systems have their failings while supporting different applications and interfacing on different communication networks (Laurin, 2005). Further, data transmission needs to be compressed to save on costs.

#### 2.3.2 Usability

Various studies have examined the aspect of resistance of users to accept innovations and changes, and identified factors impeding the acceptance of mobile technology (Venkatesh, 1999; Compeau, Higgins & Huff, 1999; Ellen, Bearden & Sharma, 1991; Ram & Sheth, 1989).



**Figure 2.1: Consumer Resistance to Innovations (Ram & Sheth, 1989)**

A major limitation to usability of mobile devices has been the inconvenience in inputting data. The latest generation of devices have been resolved these limitations by the

introduction of touch screen technology. Banking applications need to address this issue to provide the consumers ease of use. Applications need to have the facility of continuing usage even after disruption of mobile communications without compromising on security. Potential to use applications offline would enhance their usability. The applications must lead them to ease of usability by providing shortcuts to frequently used transactions. The users must not have to resort to lengthy inputting to access data (Srite & Karahanna, 2006).

### **2.3.3 Security**

Security risk has two main elements. First, perceived risk grounded in concerns with regard for the technical performance or functional reliability of the service delivery system. Second, perceived security risk may be associated with concerns about personal security and privacy (Mohamed & Kathy, 2008). Technology use is predicated on the perception that the service delivery system will perform to the satisfaction of the user in terms of functioning reliably and providing the requisite personal assurance.

In the purchase decision-making processes, consumers mainly consider security risk associated with the acquisition of a service or product. Generally, consumers attach more risk to intangibles as compared to physical goods. Experience and use diminish the perceived risk associated with utilization of a new product or service. Thus, the history of consumers' usage of mobile communications services is taken to be a useful criterion for segmenting a market by innovativeness categories (Munnukka, 2005).

In summary, these finding suggests that mobile phone banking must be secure. For instance, when one loses the handset, loss of service must have limited impact where the service could support a remote locking feature embedded in the software that prevents a lost phone from accessing the customer's account. Data integrity against unauthorized modification must be provided. In addition, data transmission must be secure and application and data access must be controlled. Therefore security or lack thereof must be addressed in order to encourage the utilization of mobile banking. The study sought to establish whether this holds true for the Kenyan market.

### **2.3.4 Cost**

Price is an important factor that influences the utilisation of the technology. In times of increased competition, a distribution channel must organize business processes efficiently so as to reduce distribution costs. In Mobile Banking there are three costs :- a) normal costs associated with mobile phone providers' activities, b) the bank cost and charges and c)the cellular phone cost. The cost of mobile devices though a one off cost, makes mobile banking as costly as other forms of banking. If the cost of mobile devices is very high, this discourages account holders from acquiring them hence impeding the utilization of mobile banking services (Chavidi, 2004).

Price is perceived to be the most important consequence of m-commerce utilisation compared to convenience, security, privacy and efficiency. As a result, mobile banking providers need to pay particular attention to their pricing strategy with the objective to uneven the potential factors that encourage or discourage its utilisation. Affordability in mobile banking varies by number, size and type of transactions (Mohamed & Kathy, 2008).

A major utilization obstacle is the high charges levied by the mobile service providers. It would be possible for the regulators to set maximum prices for quota volumes of SMS and other mobile messaging systems which are dedicated to mobile banking systems (Reijswoud & Weir, 2007). As these new low-cost (or even zero-cost) mobile banking services emerge, a way for the existing players to keep them out of the game will be to make inter-bank ICT systems unaffordable and/or too complex to be participated in. Regulators can have a role in controlling or eliminating that tendency by setting maximum charges and on insisting on simple but secure interoperability standards (Delgado & Kleijnen, 2004). In the Kenyan scenario though there is no charge for depositing funds, but a sliding tariff is levied on withdrawals (Omwansa, 2009).

### **2.4. Impact of Mobile Banking Utilization on Commercial Banks**

Studies done in Hong Kong to discuss various channels of banking have compared use of ATMs, Branches, use of telephone banking and internet banking. Economic benefits were not found to be relevant as most banks maintained more or less same charges for the

different channels. what was found was that usefulness was key measure. Convenience and accessibility of channels was important. Thus the shift from branch banking which has limiting hours to branchless banking e.g. use of ATMs and mobile banking (Wan,Luk & Chow, 2005).

Data from the Central Bank of Kenya shows that the use of ATMs is slowing as the use of other avenues such as point-of-sale and mobile money transactions rises. The value of ATM transactions rose to Kshs.114.61 billion in the first nine months of this year from Kshs.102 billion over the same period in 2011, a 12.37 % growth.As at the end of September, there were 2,311 ATMs while the number of ATM cards stood at 1.47 million compared to 2,217 ATMs and 1.35 million cards as at September 2010. Mr Habil Olaka, the Kenya Bankers Association CEO said that ATMs will always have a place as long as there is a need to conduct cash transactions, adding that it will take time for Kenya's economy to move to a cash-lite economy ( Mugwe, 2012).

Agency banking model allows banks to liaise with commercial outlets like general merchant shops, petrol stations and supermarkets to offer financial services that include depositing and withdrawing cash. The partnership has seen banks in Kenya take financial services closer to people, in particular, to areas that lack them. It is estimated that a third of the country's 40 million people lack access to banking services. Kenya changed its banking laws in January, 2011 to allow commercial banks offer their services through the third-party businesses. The agents operate as satellite branches. It's just a matter of time before Kenya agency banking give mobile cash transfer a run for its money as adoption and use of agency banking continues to grow tremendously.

"As at March, 2013 there were 11 commercial banks that had contracted 18,082 active agents facilitating over 48.4 million transactions valued at \$3 billion," said CBK in a report for bank's performance in first quarter received Thursday."This was an increase from 10 banks that had contracted 16,333 active agents facilitating over 38.7 million transactions valued at \$2.3 billion in December 2012 ” ( Calleo, 2012)

There is no global data on mobile banking in Kenya collectively in terms of trends evidenced in number of account, increase in uptake and use of mobile banking however individual banks can serve as a clear trend on how mobile banking is changing the banking industry in Kenya. Two examples derived from Business daily, Kenya described below include M-Shwari and M Co-op Cash. Co-operative Bank launched a mobile wallet in May, 2014 and has since increased banks revenue of about 14% ,which has been a big boost to their non-funded income. Commercial Bank of Africa (CBA) grew their number of accounts to 10 million via M-Shwari by December, 2014, making them Kenya's biggest lender by increasing users on M-Shwari. Due to M-Shwari CBA increased its loan /deposit accounts by 13% between 2011 and 2012 to 17.6 million from 15.6 million.

It is anticipated that mobile banking has greatly improved the customer experience as they no longer have to queue in the banking halls to access basic services such as getting account balances, payment of bills and other services such as access to credit. Further, through this channel customers can have increased banking hours and increased convenience.

In summary it is clear mobile banking has had an impact on commercial banks in Kenya in terms of change of how to approach the unbanked. It has greatly seen banks increase their revenue streams as well as increase income/bottom line up to an average of 13%. Other than transfers, mobile banking is now greatly used to provide other financial services such as loan application, savings and funds transfer. Customer experience is suspected to have been enhanced using this channel as banks and service providers are able to reach out to their customers easily and directly.

## **2.5 Empirical Review and Gap Analysis**

Much research has been conducted in the mobile service industry, ranging from product design (Andersson & Hedman, 2007), business models (Lyytinen & Damsgaard, 2001), user analysis (Constantiou, 2008), technical analysis (Li & Tao, 2009). Studies cover both supply and demand. There have been discussions on hindrances to the utilization and spreading of mobile banking services, with claims that it is because of the low data transfer

speed (Kumar, 2006). Some researchers claim that it is the lack of quality services (McMahon & Steketee, 2006) and some state business models are antiquated (Coursaris, 2006; Saugstrup & Henten, 2006).

Yet this author would challenge some of the reasons mentioned above. By 2010, some of the above challenges had been dramatically improved. The mobile industry had advanced owing to hardware developments in mobile device and telecommunication infrastructure. The emergence of high speed smartphones with revolutionary processing power, as well as the development and maturity of 3G network allow mobile service providers to give users a much smoother experience.

Previous research has put much weight on how potential businesses can be conducted in this newly emerging yet promising field, and how to design the technical details for such businesses. However, little attention have been paid on how users feel about the current mobile services and how to improve them, especially in Chinese market. A number of studies suggest that the consumer side has also shown great interest in the services provided (Dewan & Chen, 2005; Kreyer, 2003). Among the most popular mobile services: peer-to-peer payments, instant message, electronic receipts, purchases on web site, and e-tickets, routine bank service have been typical applications. Mobile financial services take up a majority of the existing applications. Mobile financial service can be roughly defined as transactions that involve payments conducted on a mobile phone. However, though studies show that there is a potential popularity and need, the progress in its adoption has been slower than expected. This has been attributed to the complexity of its transactions, lack of user-friendly mobile portals, and slow connectivity (Frolick & Chen, 2004).

A survey of 1,553 respondents between ages 9 – 34 years in Finland concluded that categories of users differ significantly in their use of mobile services. Instead of the general idea that mobile services are adapted by individuals, it was found that mobile services are better adapted in groups whose charges are paid by employers or other parties. This indicates that price is a significant factor when adopting mobile services (Aarnio, 2002).

Different interest-holders have different standpoints in mobile services business. Service providers focus on developing quality value-added services in order to increase revenue (Funk, 2007). While researchers intend to study initial adoption process to find out user-adoption criteria and then suggest market strategy and development (Lu, 2005; Hong & Tam, 2006).

Research has been carried out in the area of adoption and utilization of mobile banking; it is clear that there are gaps that are in regards to the context. Research has been carried out in the western world there have been increasing attempts to modify, expand or enhance the existing information systems theories with what is sometimes contradicting and conflicting constructs at different levels of analysis and end-user perspectives. Fundamental to these studies is the definition of adoption as a static event and the excessive attention given to the prediction of consumers intention to adopt through the use of TAM, TPB, IDT, UTAUT and their derivatives (Cheong & Park, 2005; Kwon & Chidambaram, 2000; Nysveen, Pedersen, & Thorbjørnsen, 2005a). While these existing literature contribute to the understanding of why consumers accept a certain mobile data service, gaps remain in the understanding of the process by which consumers decide whether to continue to utilize and finally adopt the service (Bhattacharjee, Perols, & Sanford, 2008).

In addition, other researchers lay emphasis on the impact of the technology post adoption through the meanings that the individual ascribes to it from the perspectives of domestication approach (Haddon, 2006). Thus, scholarly IS literature tends to produce a gap between technology acceptance and the social implications of utilization. This could be partly attributed to the interchangeable use of technology acceptance and technology adoption in Information Systems (IS) literature (Hynes & Richardson, 2009; Renaud & Van Biljon, 2008) position that when an end-user embraces a technology, then he or she expects to replace the item if it breaks and find innovative uses for it. The distinction between technology acceptance and adoption is crucial in understanding the adoption process over time. From a theoretical perspective, knowing the different antecedents of each stage of the adoption process is vital in explaining the formation of the initial intentions of a particular mobile service. Specifically, the study investigates the factors that influence the end-user decisions at the various utilization stages.



Globally, numerous 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 (Donner and Tellez, 2008).

Meanwhile, Kigen (2010) indicates that the usage of mobile banking has increased but is yet to meet competitive expectations. Despite the fact that numerous mobile banking adoption studies have been done (Laurin & Lin, 2005; Ghadialy, 2006; Zhou et al., 2010), most of them were conducted in countries such as Korea (Chung & Kwon, 2009), Singapore (Riquelme & Rios, 2010), Brazil (Laukkanen et al., 2010), Taiwan (Laurin & Lin, 2005), and China (Wang et al., 2010) with relatively little attention paid to developing countries like Kenya. These studies show varying results and this study therefore intend to fill this gap in a local context.

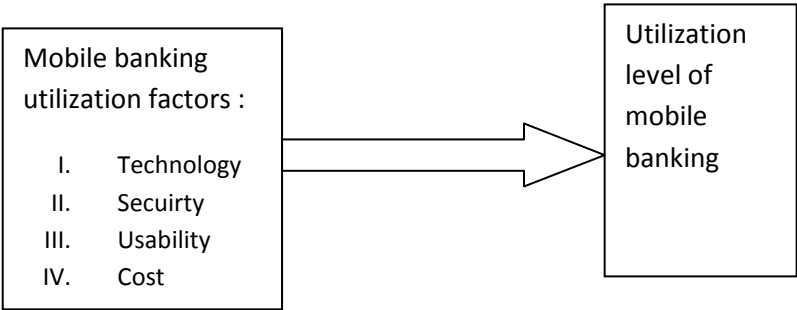
Locally, various studies have been conducted on mobile banking. Mutua (2009) studied mobile banking as a strategic response by Equity Bank Kenya Limited to the challenge in the external environment. Otieno (2008) studied challenges in the implementation of mobile banking information systems in commercial banks in Kenya. Gichuki (2009) did a survey of the value of ICT in the banking industry in Kenya. Kiemo (2009) studied evaluation of security of Information Systems in the Kenyan banking industry. Kinyua (2009) studied the linkage of internet banking and customer satisfaction in commercial banks. Macharia (2009) studied commercial banks perception of the influence of mobile telephones on growth of banking business in Kenya. Mutua (2013) studied the effects of mobile banking on performance of commercial banks. None of these studies fully addresses the factors affecting utilization of mobile banking, their impact on commercial banks, and/or the challenges experienced by the user. Area of study is Thika town due to its uniqueness being a rural urban centre .

## **2.6 Summary of Literature Review**

Mobile banking has been discussed extensively in this chapter. Various models both bank and non bank led models have been reviewed. Mobile banking has affected the way banks

do business by increasing income channels and avenues of money transfer, saving and borrowing especially micro lending. Further ,it is suspected that the customer experience has been enhanced as the customer has an additional avenue to access information as well as transact. Lastly, factors affecting adoption and use of mobile banking have also been discussed and include technology, usability, security, and cost.

**2.8 Conceptual Framework**



**Figure: 2.2 Conceptual Framework (Self, 2015)**

The diagram above depicts the four major variables role in contributing to utilization of mobile banking .

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1. Introduction**

This chapter deals with the research design, description of the population, sampling techniques and sample size, the data collection procedures, data collection instruments, data analysis, and the expected results.

#### **3.2. Research Design**

The research design adopted in this study was descriptive design, which was done using a cross-sectional survey. The descriptive design is appropriate where the researcher is knowledgeable about the key aspects of a phenomenon but has little knowledge, if any, regarding their characteristics, nature or details. The objective of the study was to learn the, who, what, when, where and how of the topic. The purpose of the study was to describe the characteristics of relevant groups, to estimate the percentages of units in a specified population exhibiting certain behaviour, to determine the perception of product characteristics, to determine the relationship between variables and to make some specific predictions (Sekaram, 2003). The cross-sectional survey was involved in collecting representative data from a sample population, over a specific period in time.

#### **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, and events, group of things or households that are being investigated.

The population for this study comprised fifteen commercial bank branches based in Thika Town, Kenya (Appendix I). These are some of the banks registered by the Central Bank of Kenya (CBK Annual Report, 2013). The study focuses response from employees of the bank working at the branch level and those directly relating to mobile banking.

For the study Thika town was selected due to convenience with reference to access of information and it being a mix of both urban and rural representation. In general our population study covered all commercial banks in Kenya for primary data collection.

Following the small number of institutions in the industry in Thika, the study included all the institutions 15 in number, hence a census study was conducted. The target population for the study included the 15 commercial banks operating in Thika in Kenya as at September 2015.

A complete list of the commercial banks operating in Kenya obtained from CBK indicates that there were 15 registered commercial banks as at September 2015.

#### **3.4. Sampling Technique and Sample Size.**

The sampling technique used for this study was stratified random sampling. The technique was chosen because there may be identifiable subgroups of elements within the population that may be expected to have different parameters on the variable of interest; Sekaram (2003) The sample size was calculated using a formula provided by Yamane (1967) as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

$n$  = Sample size

$N$  = Population size

$e$  = Desired level of precision

Therefore:

$$\text{Sample size } (n) = 405 / 1 + 4.5(.1)^2 = 80$$

Allowing for 30% non-response, the sample size was adjusted upwards to 105. According to Israel (1992) the sample size is often increased by 30% to compensate for non-response. A proportionate sample size from each strata will be selected to come up with overall sample size of 105 respondents from all the banks.

The sample size from each bank will be calculated using the method below

Sample=Population of a bank/Total population\*Total sample.

STAFF MEMBERS' IN THE BRANCHES.	POPULATION	SAMPLE
EQUITY(TWO BRANCHES)	38	10
EQUITY (SECOND BRANCH)	39	10
FAMILY FINANCE	32	8
KENYA COMMERCIAL BANK	46	12
COOPERATIVE BANK OF KENYA	23	6
BARCLAYS BANK OF KENYA	26	7
STANDARD CHARTERED BANK OF KENYA	24	6
Bank of Africa	17	4
Bank of Baroda	15	4
Chase Bank	26	7
Consolidated Bank	30	8
Diamond Trust Bank	16	4

Fina Bank	21	5
NIC Bank	18	5
CFC Stanbic	34	9
TOTAL	405	105

Source (2015)

### **3.4. Data Collection**

The study requires the use of both primary and secondary data. Primary data was obtained through the use of questionnaires, which had both structured and unstructured questions (Appendix II). Questionnaires makes it possible to reach large samples, thus making the results more dependable and reliable. Respondents who are not easily approachable can be reached conveniently and respondents have adequate time to give well thought out answers (Kothari, 2008). This makes it possible to obtain all the relevant information. In some cases open-ended questions were used. This gives the respondent freedom of expression and permitted a greater depth of response since they were not tied up to the views of the researcher. In most cases closed ended questions were to be used. Secondary data was obtained from the Kenya Institute of Bankers reports and individual banks' websites for the past five years.

The primary data was obtained after obtaining an authority letter from the University of Nairobi permitting this researcher to collect data. The respondents were assured that the information obtained was treated for research purpose and no other purpose (Kothari, 2008).The questionnaires were mailed some respondents or distributed physically to the sampled group randomly.

### **3.5. Data Analysis**

The data analysis procedures in these study included editing of raw data, coding of responses, classification according to class intervals and tabulation (Kothari, 2008).Only primary data shall be obtained . Quantitative data will be analyzed using descriptive

statistics; the mean, mode, median and standard deviation. This includes use of frequency tables, cumulative tables, percentages and inferential statistics to find determine parameters from sample statistics were done using correlation, anova and t-tests. These data was then presented by use of tables, bar charts and pie charts. SPSS software was used to analyze the data.

## **CHAPTER FOUR:**

### **DATA ANALYSIS AND INTERPRETATION**

#### **4.1 Introduction**

This chapter presents the analysis, findings and discussions on the topic. Survey questionnaires were administered to the selected employees **in commercial banks, in thika town** . The data was analysed with the help of SPSS statistical package and presented using tables, charts, frequencies and percentages. Quantitative data was analyzed using descriptive statistics; the mean, mode, median and standard deviation and inferential statistics to find determine parameters from sample statistics were done using correlation ,anova and t-tests.

#### **4.2 Background information and response rate**

##### **4.2.1 Response rate**

The study involved one hundred and five (105) questionnaires which were issued to collect data from employees. Ninety three (93) questionnaires were filled and returned for analysis which gave a response rate of 88.6%. This response rate was considered adequate for analysis to determine the factors affecting mobile banking in commercial banks, in thika town. According to Awino (2011), a response rate of 65 percent is acceptable for such studies.



**Table 4.1 Name of Organization \* Position Cross tabulation**

Organization	Manag er	Credit officers	Assista nt Manage r	Relations hip officer	Financial Consultant s	Operations Officer	Teller	Total
Bank of Africa	2	2	0	1	0	2	1	8
Bank of Baroda	1	1	0	1	0	1	2	6
Barclays	2	1	1	0	0	1	1	6
CFC Stanbic	2	1	1	1	1	1	1	8
Chase	2	0	0	0	0	2	1	5
Co- operative	1	0	1	0	1	1	3	6
Consolidat e	0	0	1	0	0	0	1	2
Consolidat ed	0	1	1	0	0	0	2	4
Diamond Trust	1	1	1	0	0	1	0	4
Equity	3	4	1	0	0	3	3	13
Family	5	1	2	0	1	5	0	12

FINA	2	0	1	0	1	2	1	7
Kenya								
Commercial Bank	2	0	1	1	0	2	1	7
NIC	1	0	1	1	0	0	1	4
Standard Chartered	1	1	1	1	0	1	2	7
<b>Total</b>	<b>25</b>	<b>13</b>	<b>13</b>	<b>6</b>	<b>4</b>	<b>22</b>	<b>20</b>	<b>93</b>

From table 4.1, 25 of the respondents were managers, 13 were credit officers, 3 were assistant managers, 6 were relationship officers, 4 were financial consultants, 22 were operation officers, and 20 were bank tellers. All the 15 banks were well represented and majority of the respondents were from equity bank. The respondents gave their views on the factors affecting mobile banking in commercial banks, in Thika town.

#### 4.2.2 General Information on Gender and age

The respondents were asked to provide information on their gender and their age and they responded as follows.

Table 4.2 Age \* Gender Cross tabulation

% within Gender

Age	Gender		Total
	Female	Male	
20-30	40.5%	47.1%	44.1%
31-40	50.0%	49.0%	49.5%
Over 40	9.5%	3.9%	6.5%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

From table 4.2, employees working from these banks are age of between 20-20 years, 40.5% were female and 47.1% were male between 31-40 years of age, 50.0% were

female and 49.0% were male. Over 40 years of age ,9.5% were female and 3.9% were male. Majority of the employees who respondent were between 31-40 years of age.

#### 4.2.3 General Information on Level of education and Years have worked.

The respondents were asked to provide information on their Level of education and Years have worked and they respondent as follows.

Table 4.3 Time Worked in the Organization \* Level of Training Cross tabulation

Time Worked in the Organization	Secondary	Diploma	University	Other Specify	Total
1	2.2%		5.4%	2.2%	9.8%
2	6.5%	1.1%	17.4%	2.2%	27.1%
3	3.3%	6.5%	27.2%	4.4%	44.2%
4	1.1%	1.1%	4.4%		6.5%
5		1.1%	2.2%		5.4%
	2.2%				
6		1.1%	1.1%	2.2%	4.3%
13				1.1%	1.1%
14	1.1%		1.1%		2.2%
15			1.1%		1.1%
<b>Total</b>	<b>16.3%</b>	<b>10.9%</b>	<b>60.9%</b>	<b>12.0%</b>	<b>100.0%</b>

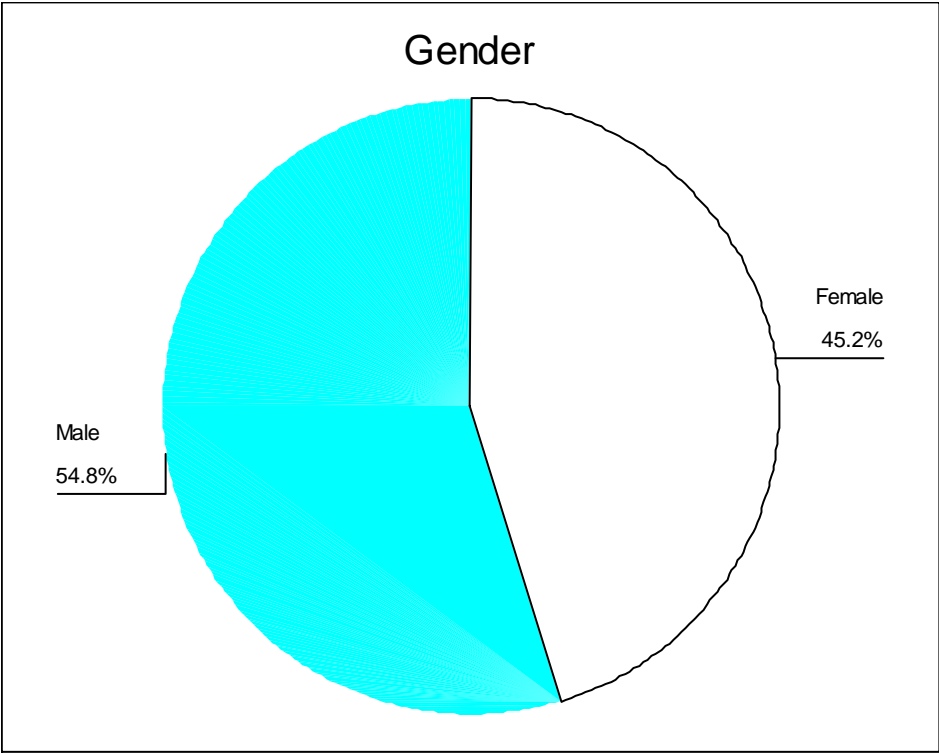
From table 4.3, all employees working in these banks have qualifications between secondary education, diploma level ,university level and others. Majority had university qualifications that amounted to 60.2% of the respondents. For diploma level of training

they amounted to 10.9%,for secondary amounted to 16.3% and for other levels of training including CPA 1,CPA II and CPA III were 12%.Majority of the responded had worked for three years in these organizations and amounted to 44.2% of the respondents.

4.2.4 General Information on Gender

The respondents were asked to provide information on their gender and they respondent as follows.

Figure 4.1



From figure 4.1,54.8% of the respondents were male while the rest (45.2%) were female. From the research, the different genders were sampled fairly to capture their views on the factors affecting mobile banking in commercial banks, in thika town.

### 4.3 Factors affecting the utilization of mobile banking.

The respondents were asked to the level of effect of security ,usability,cost and technology on the utilization of mobile banking and they responded as follows:

#### 4.3.1 Security

The respondents were to rank ATM banking, Branch banking, Mobile banking and internet banking services on the basis of level of security offered when one is using the services.They were to rank in the form of very secure, secure, insecure and very insecure. The ranking were done as in the table below.

Table 4.4 Descriptive Statistics on level of security

	ATM Banking	Branch Banking	Mobile Banking	Internet Banking
N	Valid 93	93	93	93
	Missing 0	0	0	0
Mean	2.06	1.66	1.98	2.37
Mode	2	1	2	2
Std. Deviation	.639	.715	.675	1.030

From table 4.4,ATM banking service had a mode of 2 which is equivalent to secure as per the likert scale and it had a very small standard deviation of .639 which indicates that many of the respondents uniformly agreed that the ATM banking service is secure and this affects the utilization of mobile banking in commercial banks in Thika town.Branch banking had a mode of 1 which is equivalent to very secure as per the likert scale and it had a very small standard deviation of .715 which indicates that many of the respondents uniformly agreed that the branch banking service is very secure and this affects the utilization of mobile banking in commercial banks in Thika town.Mobile banking had a mode of 2 which is equivalent to secure as per the likert scale and it had a very small standard deviation of .675 which indicates that many of the respondents uniformly agreed that the mobile banking service is secure and this affects the utilization of mobile banking in commercial banks in Thika town.Internet banking had a mode of 2 which is equivalent to secure as per the likert scale and it had a small standard deviation of 1.030 which indicates that many of the respondents agreed that the branch banking service is very

secure and this affects the utilization of mobile banking in commercial banks in Thika town.

#### 4.3.2 Explanation for Secure/Insecure

The respondents gave the following reasons for mobile banking being very secure or very insecure as in the table below.

Table 4.5 Explanation for Secure/Insecure

	Frequency	Percent	Valid Percent	Cumulative Percent
No Response	80	86.0	86.0	86.0
Code	1	1.1	1.1	87.1
Easy services	2	2.2	2.2	89.2
Hacking	2	2.2	2.2	91.4
Valid no information	1	1.1	1.1	92.5
Risks	5	5.4	5.4	97.8
Secure	2	2.2	2.2	100.0
<b>Total</b>	<b>93</b>	<b>100.0</b>	<b>100.0</b>	

From table 4.5, 1.1 % said that it had a code that make s it to be secure,2.2% said that it's an easy service that why it's very secure,2.2% said that it can be hacked and thus makes it to be very insecure,1.1% said that they had no information on mobile banking,5.4% accepted that it had risks and 2.2% said that its secure. 86% did not give any explanation of security of the mobile banking.

#### 4.3.3 Security factors affecting utilization of mobile banking

The respondents were asked on their evaluation about the security factors affecting the utilization of mobile banking of commercial banks in Thika town and they results were summarized as in the table below.

Table 4.6 One-Sample Test of Security factors affecting utilization of mobile banking

	t	df	Sig. (2-tailed)	Mean	95% Confidence Interval of the Difference	
					Lower	Upper
Risks of Fraudsters in accessing Accounts using Mobile Banking	18.129	92	.000	2.602	2.32	2.89
Lack of Transaction details in form of transaction slips	17.902	92	.000	2.817	2.50	3.13
The use of PIN in mobile banking	19.579	92	.000	2.903	2.61	3.20
Third Party exposure in accessing clients financial information via mobile banking	21.011	92	.000	3.054	2.77	3.34
Trust of the bank in keeping customers info private and confidential	21.133	92	.000	2.978	2.70	3.26
Employees working for the bank pose a threat of insider fraud rackets	21.190	92	.000	3.022	2.74	3.30

From table 4.6, the risk of fraudsters in accessing Accounts using mobile banking has a mean of 2.602 which is equivalent to agree as per the likert scale and it has a p-value <0.05 which indicates that on average respondents agreed that risks of fraudsters accessing accounts using mobile banking is a significant security factor that affects the utilization of mobile banking of commercial banks in Thika town. Lack of Transaction details in form of transaction slips has a mean of 2.817 which is equivalent to agree as per the likert scale and it has a p-value <0.05 which indicates that on average respondents

agreed that Lack of Transaction details in form of transaction slips is a significant security factor that affects the utilization of mobile banking of commercial banks in Thika town. The use of PIN in mobile banking has a mean of 2.903 which is equivalent to agree as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents agreed that the use of PIN in mobile banking is a significant security factor that affects the utilization of mobile banking of commercial banks in Thika town. Third Party exposure in accessing clients financial information via mobile banking has a mean of 3.054 which is equivalent to uncertain as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents were uncertain that third party exposure in accessing clients financial information via mobile banking is a significant security factor that affects the utilization of mobile banking of commercial banks in Thika town. Trust of the bank in keeping customers info private and confidential has a mean of 2.978 which is equivalent to agree as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents agreed that trust of the bank in keeping customers info private and confidential is a significant security factor that affects the utilization of mobile banking of commercial banks in Thika town. Employees working for the bank pose a threat of insider fraud rackets has a mean of 3.022 which is equivalent to uncertain as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents were uncertain that employees working for the bank pose a threat of insider fraud rackets is a significant security factor that affects the utilization of mobile banking of commercial banks in Thika town

#### **4.3.4 Usability**

The respondents were to rank ATM banking, Branch banking, Mobile banking, and internet banking services on the basis of degree of convenience when one is using the services. They were to rank in the form of very convenient, convenient, inconvenient and don't know. The ranking were done as in the table below.



Table 4.7 Descriptive Statistics on degree of convenience

		ATM Banking	Branch Banking	Mobile Banking	Internet banking
N	Valid	93	93	93	93
	Missing	0	0	0	0
Mean		1.10	1.98	1.20	1.80
Mode		1	2	1	2
Std. Deviation		.332	.254	.405	.405

From table 4.7, ATM banking service had a mode of 1 which is equivalent to very convenient as per the likert scale and it had a very small standard deviation of .332 which indicates that many of the respondents uniformly agreed that the ATM banking service is very convenient to use and this affects the utilization of mobile banking in commercial banks in Thika town. Branch banking had a mode of 2 which is equivalent to convenient as per the likert scale and it had a very small standard deviation of .254 which indicates that many of the respondents uniformly agreed that the branch banking service is convenient to use and this affects the utilization of mobile banking in commercial banks in Thika town. Mobile banking had a mode of 1 which is equivalent to very convenient as per the likert scale and it had a very small standard deviation of .405 which indicates that many of the respondents uniformly agreed that the mobile banking service is very convenient to use and this affects the utilization of mobile banking in commercial banks in Thika town. Internet banking had a mode of 2 which is equivalent to convenient as per the likert scale and it had a very small standard deviation of .405 which indicates that many of the respondents agreed that the branch banking service is convenient to use and this affects the utilization of mobile banking in commercial banks in Thika town.

### 4.3.5 Consideration of mobile handset as user –friendly.

The respondents were asked if they consider their mobile handset as user –friendly in conducting mobile banking transactions and they responded as in the table below.

Table 4.8 If no explain \* as user-friendly in conducting mobile banking transactions Cross tabulation

% within If no explain

		as user-friendly in conducting mobile banking transactions		Total
		No	Yes	
			100.0%	100.0%
	Operating system does not support m banking platform	100.0%		100.0%
If no explain	Phone has few functions	100.0%		100.0%
	The power in the phone does not stay for long	100.0%		100.0%
	Window phone not working on m banking	100.0%		100.0%
Total		28.0%	72.0%	100.0%

From table 4.8,72% of the respondents accepted that their phones are user friendly in conducting mobile banking transaction. About 28% said that their phone is not user –friendly and hence it cannot help then when it comes to conduct mobile banking transactions. For those who said no, had various reasons such as operating system of their phones cannot support banking platform,power in the phone does not stay for long etc as shown in the table.

### 4.3.6 Cost and Technology.

The respondents were to rank the following constraints regarding use of mobile banking. They were to rank in the form of strongly agree, agree, uncertain, disagree and strongly disagree. The ranking were done as in the table below

Table 4.9 One-Sample Test of cost and technology factors

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Process of enrolling subscribers to mobile banking services	26.216	104	.000	3.514	3.25	3.78
Service Instructions in Mobile Banking	33.782	104	.000	3.819	3.59	4.04
Technical Problems When Using Mobile Banking	23.926	104	.000	2.771	2.54	3.00
Too many security features complicates mobile banking	29.269	104	.000	3.600	3.36	3.84
Mobile banking services are expensive	14.550	104	.000	1.695	1.46	1.93
Cost of mobile banking services far outweigh the benefits	19.905	104	.000	2.514	2.26	2.76

From table 4.9, Process of enrolling subscribers to mobile banking services has a mean of 3.514 which is equivalent to uncertain as per the likert scale and it has a p-value <0.05

which indicates that on average respondents were uncertain that process of enrolling subscribers to mobile banking services is a significant cost and technology and hence it affects the utilization of mobile banking of commercial banks in Thika town. Service Instructions in Mobile Banking has a mean of 3.819 which is equivalent to uncertain as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents were uncertain that Service Instructions in Mobile Banking is a significant cost and technology and hence it affects the utilization of mobile banking of commercial banks in Thika town. Technical Problems When Using Mobile Banking has a mean of 2.771 which is equivalent to agree as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents agree that Technical Problems When Using Mobile Banking is a significant cost and technology and hence it affects the utilization of mobile banking of commercial banks in Thika town. Too many security Features complicates mobile banking has a mean of 3.600 which is equivalent to strongly as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents were uncertain that Too many security features complicates mobile banking, hence it affects the utilization of mobile banking of commercial banks in Thika town. Mobile banking services are expensive has a mean of 1.695 which is equivalent to strongly agree as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents strongly agree that Mobile banking services are expensive there is a significant cost to its technology and hence it affects the utilization of mobile banking of commercial banks in Thika town. Cost of mobile banking services far outweigh the benefits has a mean of 2.514 which is equivalent to agree as per the likert scale and it has a p-value  $<0.05$  which indicates that on average respondents agree that Cost of mobile banking services far outweigh the benefits even though there is a significant cost of technology and hence it affects the utilization of mobile banking of commercial banks in Thika town

#### 4.4 Impact of the factors on commercial banks

Respondents were asked to explain how the security, usability, cost and technology affects commercial banks and they responded as follows.

##### 4.4.1 Influence of mobile banking utilization on commercial banks.

Respondents suggested that mobile banking utilization has influenced commercial banks in Kenya in the following table.

4.10 Has mobile banking utilization influenced the commercial banks in Kenya

	Frequency	Percent	Valid Percent	Cumulative Percent
No Response	9	9.7	9.7	9.7
Customer carry out transactions without visiting banks	24	25.8	25.8	35.5
Easy customer accessing information	6	6.5	6.5	41.9
Valid Facilitates easy transfer of funds	6	6.5	6.5	48.4
Increased accessibility	6	6.5	6.5	54.8
Increase their income	6	6.5	6.5	61.3
Reduce queries on balance	6	6.5	6.5	67.7
Reduce queues	30	32.3	32.3	100.0
Total	93	100.0	100.0	

From table 4.10, 9.7% of the respondents did not respond on the influence of mobile banking utilization on the commercial banks, 25.8% said that mobile banking enable customers carry out transactions without visiting banks, 6.5% said it enable Easy customer accessing information, Facilitates easy transfer of funds, Increased accessibility, Increase their income, and reduce queries on balance. Majority of the respondents about 32.3% said that mobile banking reduces queues in commercial banks.

#### 4.4.2 Opinion on how mobile banking can be improved in Kenya.

Respondents were requested to give opinion on how mobile banking can be improved in Kenya and they responded as in the table below.

Table 4.11 Opinion on how can mobile banking be improved in Kenya

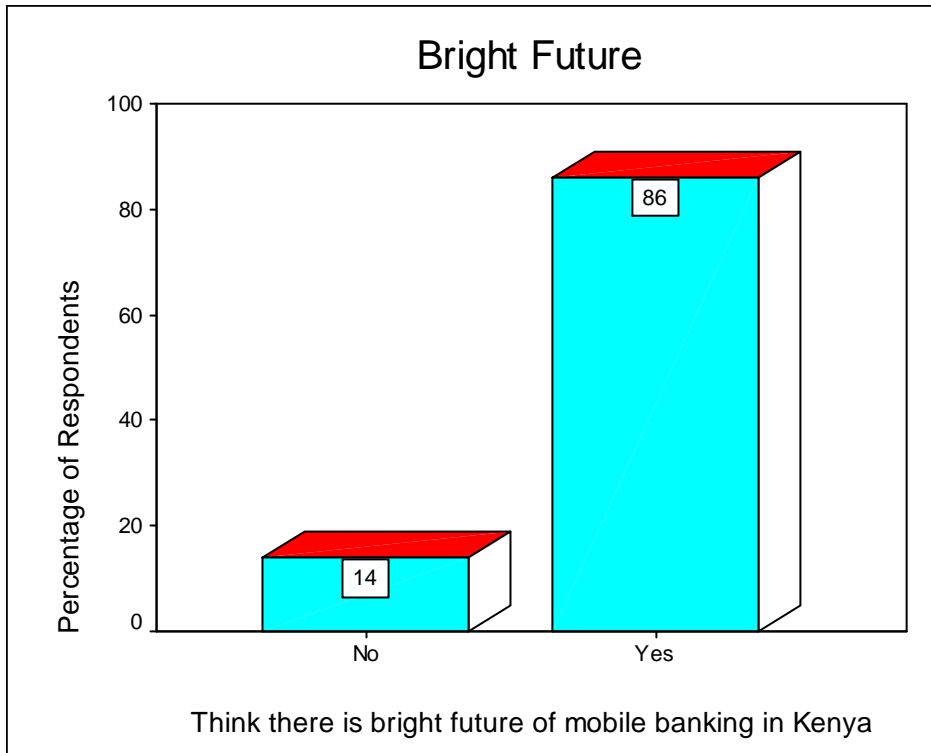
	Frequency	Percent	Valid Percent	Cumulative Percent
No Response	21	22.6	22.6	22.6
come up with application	8	8.6	8.6	31.2
Create accessibility of information	8	8.6	8.6	39.8
Create customer awareness	8	8.6	8.6	48.4
Eliminate middlemen costs	8	8.6	8.6	57.0
Valid Make more registrations	8	8.6	8.6	65.6
Provide security	1	1.1	1.1	66.7
Provide customer care	7	7.5	7.5	74.2
Reduce costs	8	8.6	8.6	82.8
Setting targets	8	8.6	8.6	91.4
Train agents	8	8.6	8.6	100.0
Total	93	100.0	100.0	

From table 4.11, 22.6 % of the respondents did not give any opinion on how mobile banking can be improved in Kenya of mobile banking utilization on the commercial banks, 8.6% said that mobile banking can be improved by coming up with application that provide information to customers, Create accessibility of information, Create customer awareness, Eliminate middlemen costs, and Make more registrations. Only 1.1% of the respondents said that they should provide security. Some said that they should provide customer care. The rest who amounted to 8.6% each had the opinion that they reduce costs, set targets and train agents.

#### 4.5 Think that there is bright future for mobile banking in Kenya.

Respondents were asked to suggest if they think that there is a bright future for mobile banking in Kenya and they responded as in the figure below.

Fig 4.2: Bright Future



From figure 4.2,14% of the respondents said that there is no future bright for mobile banking in Kenya. Majority of the respondent ,86% said that there is a bright future for mobile banking in Kenya.

#### 4.6 Rank in order of importance according to how customers perceive your service.

Respondents were asked to rank the following statements in order of importance according to how they think customers perceive their products and they responded as in the table below.

#### 4.12 Descriptive Statistics on raking of statements

	N	Mean	Std. Deviation	Std. Error Mean
Reduction of queues in banking halls due to anywhere anytime service	93	1.80	.984	.102
Reduction of queues in ATMs due to anywhere anytime service	93	2.19	1.163	.121
Improved customer transaction management	93	2.00	.897	.093
Fairly easily access information about product and service.	93	1.19	.397	.041
Easier account management by customers	93	1.20	.405	.042
Increased number of customer accounts due to range of services offered eg bill payment	93	1.81	.756	.078
Improved customer satisfaction with the way services are offered	93	1.20	.405	.042
Using M-Banking service saves time.	93	1.80	.984	.102
The customer finds M-Banking services useful	93	1.59	.797	.083
The customer finds M-Banking a convenient service	93	1.39	.794	.082



Using M-banking service enables the customer to accomplish their banking activities more quickly.	93	1.00	.000	.000
M-banking has impacted positively on service delivery of the bank.	93	2.00	.899	.095

From table 4.12, Reduction of queues in banking halls due to anywhere anytime service has a mean of 1.8 which is equivalent to most important from likert scale and it has a very small standard deviation of .984 which indicates that respondents suggested that reduction of queues in banking halls due to anywhere anytime service is most important in mobile banking according to how customers perceive their services. Reduction of queues in ATMs due to anywhere anytime service has a mean of 2.19 which is equivalent to important from likert scale and it has a small standard deviation of 1.163 which indicates that respondents suggested that Reduction of queues in ATMs due to anywhere anytime service is most important in mobile banking according to how customers perceive their services. Improved customer transaction management has a mean of 2.00 which is equivalent to important from likert scale and it has a very small standard deviation of .897 which indicates that respondents suggested that improved customer transaction management is most important in mobile banking according to how customers perceive their services. Fairly easily accessible information about product and service has a mean of 1.19 which is equivalent to most important from likert scale and it has a very small standard deviation of .397 which indicates that respondents suggested that fairly easily accessible information about product and service is most important in mobile banking according to how customers perceive their services. Easier account management by customers has a mean of 1.20 which is equivalent to most important from likert scale and it has a very small standard deviation of .405 which indicates that respondents suggested that easier account management by customers is most important in mobile banking according to how customers perceive their services. Increased number of customer accounts due to range of services offered eg bill payment has a mean of 1.81 which is equivalent to most important from likert scale and it has a very small standard deviation of .756 which indicates that respondents suggested that Increased

number of customer accounts due to range of services offered eg bill payment is most important in mobile banking according to how customers perceive their services. Improved customer satisfaction with way services are offered has a mean of 1.20 which is equivalent to most important from likert scale and it has a very small standard deviation of .405 which indicates that respondents suggested that improved customer satisfaction with way services are offered is most important in mobile banking according to how customers perceive their services. Using M-Banking service saves time has a mean of 1.80 which is equivalent to most important from likert scale and it has a very small standard deviation of .984 which indicates that respondents suggested that using M-Banking service saves time, is most important in mobile banking according to how customers perceive their services. The customer finds M-Banking services useful has a mean of 1.59 which is equivalent to most important from likert scale and it has a very small standard deviation of .797 which indicates that respondents suggested that the customer finds M-Banking services useful is most important in mobile banking according to how customers perceive their services. The customer finds M-Banking a convenient service has a mean of 1.39 which is equivalent to most important from likert scale and it has a very standard deviation of which indicates that respondents suggested that the customer finds M-Banking a convenient service, is most important in mobile banking according to how customers perceive their services. The customer finds M-Banking a convenient service has a mean of 1.00 which is equivalent to most important from likert scale and it has a standard deviation of .000 which indicates that respondents suggested that the customer finds M-Banking a convenient service is most important in mobile banking according to how customers perceive their services. M-banking has impacted positively on service delivery of the bank has a mean of 2.00 which is equivalent to important from likert scale and it has a standard deviation of .899 which indicates that respondents suggested that the M-banking has impacted positively on service delivery of the bank, is important in mobile banking according to how customers perceive their services.

#### 4.7 Rank challenges of mobile banking in Kenya

Respondents were asked to rank the following challenges facing mobile banking in Kenya in order of importance and they respondents as in the table below.

**Table 4.13 Descriptive Statistics of challenges**

		cost	Security	Lack of Regulatory framework	Customer Awareness
N	Valid	93	93	93	93
	Missing	0	0	0	0
Mean		2.61	1.78	2.56	1.70
Mode		2	1	2	1
Std. Deviation		1.286	1.241	1.289	1.071

From table 4.13, cost of services as a challenge has mode of 2 which is important as likert scale and it has a small standard deviation of 1.286 which indicates that respondents ranked cost of the services as an important challenge facing mobile banking in Kenya. Security as a challenge has mode of 1 which is most important as likert scale and it has a small standard deviation of 1.241 which indicates that respondents ranked security as most important challenge facing mobile banking in Kenya. Lack of Regulatory framework as a challenge has mode of 2 which is important as likert scale and it has a small standard deviation of 1.289 which indicates that respondents ranked lack of Regulatory framework as an important challenge facing mobile banking in Kenya. Customer Awareness as a challenge has mode of 1 which is most important as likert scale and it has a small standard deviation of 1.071 which indicates that respondents ranked lack of customer awareness as an important challenge facing mobile banking in Kenya.

#### 4.7 Rank Factors affecting utilization of mobile banking in Kenya

Respondents were asked to rank the following factors affecting utilization of mobile banking in Kenya in order of importance and they respondents as in the table below

**Table 4.14 One-Sample Test of Factors affecting utilization of mobile banking**

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Network coverage	28.480	92	.000	1.48	1.38	1.59
Cost	27.729	92	.000	1.25	1.16	1.34
Security	27.729	92	.000	1.25	1.16	1.34
Handset use	50.480	92	.000	2.24	2.15	2.32

From table 4.14, Network coverage, cost and security has a mean of 1.48, 1.25 and 1.25 respectively which is most important as per the likert scale. This shows that respondents rate the three factors as most important factors affecting utilization of mobile banking in Kenya. Handset use has a mean of 2.24 which is important as per the likert scale which indicates that respondents ranked it as an important factor affecting utilization of mobile banking in Kenya. All the factors in the table have p-value<.05 and this indicates that they are significant factors that affect the utilization of mobile banking in Kenya.

**4.7 Rank statements according how they affect utilization of mobile banking.**

Respondents were asked to rank the following statements on how they influence factors affecting utilization of mobile banking in Kenya, in order of importance and they respondents as in the table below

**Table 4.15 One-Sample Test statements according how they affect utilization of mobile banking services by customer.**

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Easy of set up/Registration process	28.880	92	.000	1.51	1.40	1.61
Complexity of use of the services provided by the bank	15.608	92	.000	1.99	1.74	2.24
Range of the services offered by the bank	49.961	92	.000	2.25	2.16	2.34
Capability of mobile phones	15.608	92	.000	1.99	1.74	2.24
Security during transactions (Issue of authentication and non-reputation)	28.880	92	.000	1.51	1.40	1.61
Loss of phone that contains financial data by user	40.336	92	.000	2.99	2.84	3.14
Cost of service to user	38.964	92	.000	1.75	1.66	1.84
Convenience of use of service by customer.	26.148	92	.000	2.26	2.09	2.43

From table 4.15, Easy of set up/Registration process has a mean of 1.51 which indicates that respondents ranked it as most important as per the likert scale. Complexity of use of the services provided by the bank has a mean of 1.99 which indicates that respondents ranked it as most important as per the likert scale. Range of the services offered by the bank has a mean of 2.25 which indicates that respondents ranked it as important as per the likert scale. Capability of mobile phones has a mean of 1.99 which indicates that respondents ranked it as most important as per the likert scale. Security during transactions (Issue of authentication and non-reputation) has a mean of 1.51 which indicates that respondents ranked it as most important as per the likert scale. Loss of phone that contains financial data by user has a mean of 2.99 which indicates that respondents ranked it as important as per the likert scale. Cost of service to user has a mean of 1.75 which indicates that respondents ranked it as most important as per the likert scale. Convenience of use of service by customer has a mean of 2.26 which indicates that respondents ranked it as important as per the likert scale. All the statements in the table have  $p\text{-value} < .05$  and this indicates that they are significant and they affect the utilization of mobile banking services by customers.

#### **4.8 Summary of chapter four**

From the findings of this chapter the major factors that determine the mobile banking in commercial banks in Thika town were found to be significant to evaluate technology, security, usability and costs that affect the utilization of mobile banking in Kenya. The use mobile banking services was ranked secure service by the respondents on the basis of level of security being offered and this can give users confidence in using the mobile banking service. The major challenges of the study were ranked most important and fairly important. Security and customer awareness was ranked most important and cost of the service and regulatory framework was ranked fairly important under challenges faced by mobile banking in Kenya.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the conclusions drawn from the findings highlighted in Chapter four and recommendations made there-to. The conclusions and recommendations drawn were focused on addressing the objectives of this study which was to establish how the four factors, technology, security, usability and cost are affecting the utilization of mobile banking in Kenya, to find out how mobile banking utilization has impacted commercial banks in Kenya, and to identify challenges facing mobile banking in Kenya, and make recommendations on the way forward.

#### 5.2 Summary of findings

This study found that technology, security, usability and cost affect mobile banking in commercial banks, in thika town for instance the technological and cost factors that affect mobile banking had a p-value  $<0.05$  and this suggests that they were significant hence making cost and technology significant factors affecting mobile banking. This is because different mobile devices available in the local market should have hardware architecture and operating systems that can support the banking applications. The current systems have their failings while supporting different applications and interfacing on different communication networks (Laurin, 2005) as per the literature review. Network coverage, cost and handset use were factors that were rated most important and important factors affecting utilization of mobile banking in Kenya. Mobile banking had a mode of 2 which is indicate that it was secure as per its level of security offered. The usability of mobile banking had a mode of 1 which indicates that it was very convenient.

Secondly the factors and statements under mobile banking utilization had a p-value  $< 0.05$  hence were significant .The cost of the services and technology also affects the utilization of mobile banking in Kenya. Potential to use applications offline would enhance their usability. The applications must lead them to ease of usability by providing shortcuts to frequently used transactions and hence the users must not have to resort to lengthy

inputting to access data (Srite & Karahanna, 2006) and this will affect the usability of the mobile banking in Kenya.

Thirdly the major challenges are cost of the services, security, regulatory framework and customer awareness. All had the mode between 1 and 2 and this means that these factors are most important and important respectively. The challenges in table 4.15 are all significant since their p-value  $<0.05$  and they were ranked between 1 and 2 on average and this indicates that they are most important and important since they affect the utilization of m-banking services by customers.

## **5.2 Conclusion**

The study noted that mobile banking has been embraced by many people and most of them were satisfied with the different services that this service provides. Some concerns about security were cited by the respondents. Potential risks to the mobile banking service were also cited and ways to counter the risks and generally to improve the mobile banking suggested. Most of the respondents were secure with ATM banking as a service and called for risks into this service to be looked into, majority of the respondents said that they were very secure with the branches where they get their banking services and a good number of the respondents cited insecurity and had reservations about mobile banking. They cited a number of risks, for example, hacking of the systems, issues of coding and also the issue of PIN. Some problems were encountered in the study like lack of knowledge about use of mobile banking, use of different handset, network connectivity and this brought about the difference in response hence proper training and network coverage should be put in place by these banks for proper utilization of m-banking services.

## **5.3 Recommendations**

Awareness creation should be enhanced so that more people can embrace mobile banking. Banks should ensure that the different services that are provided within the mobile banking are secure to improve their level of satisfaction. The different risks that have been identified should be checked and proper measures taken to eliminate them.



#### **5.4 Further Areas for Research**

Since the research was on the factors affecting the utilization of mobile banking in selected banks in Thika town, Kenya, a further study should be carried out to establish the growth of mobile banking in different banks. This will enable to evaluate the factors affecting the utilization of mobile banking and in relation to growth in banking industry. Secondly technical challenges that banks have faced in implementing mobile banking could also be researched since there is likely hood that most of the failures of the mobile banking systems are caused by the type of operating system, handset being used and the mobile banking platform.

## REFERENCES

- Aarnio, A., Enkenberg, A., Heikkila, J. and Hirvola S. (2002), Adoption and Use of Mobile Services: Empirical Evidence from a Finnish Survey. In the proceedings of the 35th HICSS, 2002. IEEE Computer Society.
- Andersson, B., & Hedman, J. (2007). Developing m-Services; lesson learned from a developers Perspective. *Communications of the Association for Information Systems*, 20(November), 605-620.
- Argamo, H. H. (2015). *The Effect of Agency Banking on The Financial Performance of Commercial Banks in Kenya in 2014: A Case Study of Chase Bank* (Doctoral dissertation, United States International University-Africa).
- Asfour, H. K., & Haddad, S. I. (2014). The Impact of Mobile Banking on Enhancing Customers' E-Satisfaction: An Empirical Study on Commercial Banks in Jordan. *International Business Research*, 7(10), p145.
- Awino (2011). *Business research methods*. Third edition Oxford: Oxford University Press.
- Bamoriya, P. S., & Singh, P. (2011). Issues & challenges in mobile banking in India: a customers' perspective. *Research Journal of Finance and Accounting*, 2(2), 112-120.
- Bhattacharjee, A. "Understanding Information Systems Continuance: An Expectation-Confirmation Model," *MIS Quarterly* (25:3), September 2001, 351-370.
- Bhattacharjee, A., and Sanford, C. "Influence Strategies for Information Technology Usage: An Elaboration-Likelihood Model," *MIS Quarterly* (30:4), December 2006, 805-825.
- Bhatti, T. (2007). Exploring factors influencing the adoption of mobile commerce. *Journal of Internet Banking and Commerce*, 12(3), 1-13.
- Brown, I., Cajee, Z., Davies, D. & Stroebel, H (2003). *Cell Phone Banking: Predictors of*

*Adoption in South Africa – An Exploratory Study*. International Journal of Information Management, Vol. 23 No. 5, pp. 381-94 Emerald Group Publishing Limited, Finland.

Central Bank of Kenya, Annual Financial Report (2008). *Payment Systems in Kenya*;

[https://www.centralbank.go.ke/index.php/acts/doc\\_download/64-2008-annual-report](https://www.centralbank.go.ke/index.php/acts/doc_download/64-2008-annual-report)

Chavidi N. S., Mulabagula G. & Suleep (2004). *Barriers to Mobile Internet Banking*

*Services Adoption: An Empirical Study in Klang Valley of Malaysia*. The Internet Business Review Issue 1 – October Issue.

Chavidi, N., & Mulabagula, G. (2004). Barriers to mobile Internet Banking services adoption: an empirical study in Klang valley of Malaysia. *The Internet Business Review, Issue*, (1).

Chung, N., & Kwon, S. J. (2009). Effect of trust level on mobile banking satisfaction: a multi-group analysis of information system success instruments. *Behaviour & Information Technology*, 28(6), 549-562.

Chung, N., & Kwon, S. J. (2009). The effects of customers' mobile experience and technical support on the intention to use mobile banking. *Cyberpsychology & Behavior*, 12(5), 539-543.

Compeau, D., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS quarterly*, 145-158.

Constantiou, I. D., & Kautz, K. (2008). Economic factors and diffusion of IP telephony: Empirical evidence from an advanced market. *Telecommunications Policy*, 32(3), 197-211.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science*, 35(8), 982-1003.

Deng, Z., Lu, Y., Wei, K. K., & Zhang, J. (2010). Understanding customer satisfaction and

- loyalty: An empirical study of mobile instant messages in China. *International Journal of Information Management*, 30(4), 289-300.
- Delgado, H. & Nieto T (2004). *Factors Underlying Attitude Formation Towards Online Banking in Finland*. *International Journal of Bank Marketing*, Vol. 20 No. 6, pp. 261-72. Emerald Group Publishing Limited, Poland.
- Dewan, S & Chen, L 2005, 'Mobile Payment Adoption in the US: A Cross-Industry, Cross-Platform Solution', *Journal of Information Privacy and Security*, vol. 1, no. 2, pp. 4-28.
- Diniz, E., de Albuquerque, J. P., & Cernev, A. K. (2011). Mobile Money and Payment: a literature review based on academic and practitioner-oriented publications (2001-2011). In *Proceedings of SIG Global Development Fourth Annual Workshop, Shanghai, China* (pp. 1-27).
- Donner, W., & Rodríguez, H. (2008). Population composition, migration and inequality: The influence of demographic changes on disaster risk and vulnerability. *Social forces*, 87(2), 1089-1114.
- Donner, J (2008). *Research Approaches to Mobile Use in the Developing World: A Review Of The Literature*. The Information Society, 24, 140\_159 Routledge, an imprint of Taylor & Francis Books Ltd, India.
- Donner J & Tellez, Camilo A (2008). *Mobile Banking and Economic Development: inking Adoption, Impact, and Use*. *Asian Journal of Communication*, 18:4,318 — 332, Routledge, India.
- Ellen, P. S., Bearden, W. O., & Sharma, S. (1991). Resistance to technological innovations: an examination of the role of self-efficacy and performance satisfaction. *Journal of the Academy of Marketing Science*, 19(4), 297-307.

- Frolick, M.N. and Chen, L. (2004) Assessing M Commerce. Opportunities, *Information Systems Management*, 21, 2, 53-61.
- Funk, J. (2007). Solving the startup problem in Western mobile Internet markets. *Telecommunications .Policy*, 31, 14-30.
- Ghadialy, Z. (2006). High speed uplink packet access (hsupa): A tutorial.
- Gikenye, W., & Ocholla, D. N. (2014). The diffusion of information and communication technologies in the informal sector in Kenya. *Mousaion*, 32(3), 29-48.
- Gruber, H., & Koutroumpis, P. (2011). Mobile telecommunications and the impact on economic development. *Economic Policy*, 26(67), 387-426.
- Gupta, S. (2013). The Mobile Banking and Payment Revolution. *European Financial Review*, 2.
- Haddon, L. (2006). The contribution of domestication research to in-home computing and media consumption. *The Information Society*, 22(4), 195-203.
- Ho Cheong, J., & Park, M. C. (2005). Mobile internet acceptance in Korea. *Internet research*, 15(2), 125-140.
- Hong, S. J., & Tam, K. Y. (2006). Understanding the adoption of multipurpose information appliances: The case of mobile data services. *Information systems research*, 17(2), 162-179.
- Hynes, D., & Richardson, H. (2009). What use is domestication theory to information systems research. *Handbook of research on contemporary theoretical models in information systems*. IGI Global.
- Ivatury, G (2004). *Harnessing Technology to Transform Financial Services for the Poor*. Small Enterprise Development, 15, 25\_30, Routledge, India.
- Ivatury, G., & Pickens, M (2006). *Mobile Phone Banking and Low-Income Customers: Evidence from South Africa*. Washington, DC: Consultative group to assist the poor (CGAP) and the United Nations Foundation, India.
- Kazi, A. K., & Mannan, M. A. (2013). Factors affecting adoption of mobile banking in Pakistan: Empirical Evidence.
- Khalifa, M., & Ning Shen, K. (2008). Explaining the adoption of transactional B2C mobile

- commerce. *Journal of enterprise information management*, 21(2), 110-124.
- Kiemo, P. M. (2009). *Evaluation of security of information systems in the Kenyan banking industry* (Doctoral dissertation, University of Nairobi).
- Kigen, K. P. (2010). The impact of mobile banking on transaction costs of microfinance institutions. *Unpublished MBA Thesis, University of Nairobi*.
- Kimenyi, M., & Ndung'u, N. (2009). Expanding the financial services frontier: Lessons from mobile phone banking in Kenya. *Washington, DC: Brookings Institution, October*.
- Kinyua, C. (2009). *The linkage of internet banking and customer satisfaction in commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Kleijnen, M., Wetzels, M., & De Ruyter, K. (2004). *Consumer Acceptance of Wireless Finance*, *Journal of Financial Services Marketing*, 8(3), 206-217  
<http://www.allbusiness.com/journal-of.-electronic-commerce-research>, Netherlands
- Kleijnen, M., De Ruyter, K., & Wetzels, M. (2007). An assessment of value creation in mobile service delivery and the moderating role of time consciousness. *Journal of Retailing*, 83(1), 33-46.
- Kothari C.R (2008) *.Research Methodology, Methods and Techniques*, 2nd revised Ed, New -Age International Publishers, India.
- Kreyer, N, Pousttchi, K & Turowski, K 2003, 'Mobile Payment Procedures: Scope and Characteristics', *e-Services Journal*, vol. 2, no. 3, pp. 7-22.
- Kwon, H. S., & Chidambaram, L. (2000, January). A test of the technology acceptance model: the case of cellular telephone adoption. In *System Sciences, 2000. Proceedings of the 33rd Annual Hawaii International Conference on* (pp. 7-pp). IEEE.
- Laukkanen, T., Sinkkonen, S., Kivijärvi, M., Laukkanen, P. (2007). *Segmenting Bank*

*Customers by Resistance to Mobile Banking. Management of Mobile Business, ICMB*

International Conference on the Volume, Issue, 9-11 July 2007 Page(s):42 – 42.

Laukkanen, T., & Kiviniemi, V. (2010). The role of information in mobile banking resistance. *International Journal of Bank Marketing*, 28(5), 372-388.

Luarn, P. & Lin, H (2005). *Toward An Understanding of the Behavioral Intention to Use Mobile Banking*. Computers in Human Behavior, Vol. 21 No. 6, pp. 873-91.

Laforet, S., Li, X., 2005. Consumers' attitudes towards online and mobile banking in China. *The International Journal of Bank Marketing* 23 (4/5), 362-380.

Lee, M. S., McGoldrick, P. J., Keeling, K. A., & Doherty, J. (2003). Using ZMET to explore barriers to the adoption of 3G mobile banking services. *International Journal of Retail & Distribution Management*, 31(6), 340-348.

Lee, K. & Chung, N. (2009). "*Understanding factors affecting trust in and satisfaction with mobile banking in Korea: A modified DeLone and McLean's model perspective*", *Interacting with Computers*, Volume 21 Issue 5-6. pp 385-392

Lyytinen, K., & Damsgaard, J. (2001). *What's wrong with the diffusion of innovation theory?* (pp. 173-190). Springer US.

McMahon, M., & Steketee, C. (2006). Investigation of Proposed Applications for LBS Enabled Mobile Handsets. Paper presented at the International Conference on Mobile Business.

Mohamed K. & Kathy, N. (2008). *Drivers For Transactional B2C M-Commerce Adoption: Extended Theory of Planned Behavior* ,Spring 2008 *Journal of Computer Information Systems*.

Mohammed, E. (2008). *Provision of Electronic Banking in the UK and the Republic of Ireland*. *International Journal of Bank Marketing*. Vol. 17 (2), 72-82.

Mohammed, M (2008). *Adoption of Mobile Commerce: Role of Exposure*. Proceedings of

the 35<sup>th</sup> Annual Hawaii International Conference on System Sciences (HICSS-35'02).

- Mugwe, D. (2012). Kenyan opt for plastic money. *Retrieved September, 24, 2013.*
- Munnukka, J. (2005). Dynamics of price sensitivity among mobile service customers. *Journal of product & brand management, 14(1), 65-73.*
- Mutua, G. M. (2009). *Mobile banking as a strategic response by Equity Bank Kenya Limited to the challenges in the external environment* (Doctoral dissertation, University of Nairobi).
- Mutua, R. W. (2013). *Effects of mobile banking on the financial performance of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Njenga A D K. (2008), *Mobile Phone Banking: Usage Experiences in Kenya*, Catholic University, Kenya.
- Nysveen, H., Pedersen, P. E., & Thorbjørnsen, H. (2005). Intentions to use mobile services: Antecedents and cross-service comparisons. *Journal of the academy of marketing science, 33(3), 330-346.*
- Omwansa, T. K. (2009). M-PESA: Progress and prospects.
- Otieno, B. J. (2008). Challenges in the implementation of mobile banking information systems in commercial banks in Kenya. *Unpublished MBA project report, School of business, University of Nairobi MBA.*
- Pedersen, P. E., Methlie, L. B., & Thorbjørnsen, H. (2002, January). Understanding mobile commerce end-user adoption: a triangulation perspective and suggestions for an exploratory service evaluation framework. In *System Sciences, 2002. HICSS. Proceedings of the 35th Annual Hawaii International Conference on* (pp. 8-pp). IEEE.
- Ram, S., & Sheth, J. N. (1989). Consumer resistance to innovations: the marketing problem and its solutions. *Journal of Consumer Marketing, 6(2), 5-14.*
- Reijswoud, V (2007). *Mobile Banking an African Perspective*, Asian Media and Information Center, India.



- Renaud, K., & Van Biljon, J. (2008, October). Predicting technology acceptance and adoption by the elderly: a qualitative study. In *Proceedings of the 2008 annual research conference of the South African Institute of Computer Scientists and Information Technologists on IT research in developing countries: riding the wave of technology* (pp. 210-219). ACM.
- Riquelme, H. E., & Rios, R. E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing*, 28(5), 328-341.
- Rogers Everett, M. (1995). Diffusion of innovations. *New York*.
- Saleem, Z., & Rashid, K. (2011). Relationship between customer satisfaction and mobile banking adoption in Pakistan. *International Journal of Trade, Economics and Finance*, 2(6), 537-544.
- Saugstrup, D., & Henten, A. (2006). *Developing Personal Network Business Models. Paper presented at the International Conference on Mobile Business.*
- Sekaran, S., Foster, R. G., Lucas, R. J., & Hankins, M. W. (2003). Calcium imaging reveals a network of intrinsically light-sensitive inner-retinal neurons. *Current biology*, 13(15), 1290-1298.
- Sharma, M. K., & Bhagwat, R. (2006). Practice of information systems: Evidence from select Indian SMEs. *Journal of manufacturing technology management*, 17(2), 199-223.
- Srite, M., & Karahanna, E. (2006). The role of espoused national cultural values in technology acceptance. *MIS quarterly*, 679-704.
- Szmigin, I. T., & Bourne, H. (1999). Electronic cash: a qualitative assessment of its adoption. *International Journal of Bank Marketing*, 17(4), 192-203.
- Tchouassi, G. (2012). Can Mobile Phones Really Work to Extend Banking Services to the Unbanked? Empirical Lessons from Selected Sub-Saharan Africa Countries. *International Journal of Developing Societies*, 1(2), 70-81.
- Teo, T. S., & Pok, S. H. (2003). Adoption of the Internet and WAP-enabled phones in Singapore. *Behaviour & Information Technology*, 22(4), 281-289.

- Tiwari, G. & Buse D (2007). *Marketing Research: Methodological Foundations*. 8<sup>th</sup> edition. Orlando: Harcourt College Publishers.
- Tornatzky, L. G., & Klein, K. J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *Engineering Management, IEEE Transactions on*, (1), 28-45.
- Wallage, M. (2005). *Belief, Attitude, Intention and Behaviour: An Introductory to Theory Research Readings*. Addison Wesley Publishing Company Wendy Atkins. Financial Service Marketing, Wiltshire Prentice Hall.
- Wallace T (2005). *Modelling Internet Adoption*. International Quarterly Journal of Marketing. Vol. 7 (2), 271-289. Elsevier Science Publishers B. V. Amsterdam, The Netherlands.
- Wan, W. W., Luk, C. L., & Chow, C. W. (2005). Customers' adoption of banking channels in Hong Kong. *International Journal of bank marketing*, 23(3), 255-272.
- Wu, J. H., & Wang, S. C. (2005). What drives mobile commerce?: An empirical evaluation of the revised technology acceptance model. *Information & management*, 42(5), 719-729.
- Venkatesh, V. (1999). Creation of favorable user perceptions: exploring the role of intrinsic motivation. *MIS quarterly*, 239-260.
- Wanjiru, G. A. (2009). *Turnaround strategy at the co-operative bank of Kenya ltd* (Doctoral dissertation).
- Yang, A. S. (2009). Exploring adoption difficulties in mobile banking services. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, 26(2), 136-149.
- Zelizer, V. A. (1994). The creation of domestic currencies. *The American Economic Review*, 138-142.
- Zhou, T., Li, H., & Liu, Y. (2010). The effect of flow experience on mobile SNS users' loyalty. *Industrial Management & Data Systems*, 110(6), 930-946.

Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior*, 26(4), 760-767.

## **APPENDIX I**

### **List of Commercial Banks in Thika Town**

1. Bank of Africa
2. Bank of Baroda
3. Barclays Bank of Kenya
4. Chase Bank
5. Consolidated Bank
6. Co-operative Bank
7. Diamond Trust Bank
8. Equity Bank
9. Equity Bank (Second Branch)
10. Family Bank
11. Fina Bank
12. Kenya Commercial Bank
13. NIC Bank
14. CFC Stanbic
15. Standard Chartered Bank

## APPENDIX II

### Questionnaire

#### Section (a) General Information

- i. Name of organization \_\_\_\_\_
- ii. Position in organization \_\_\_\_\_
- iii. Gender: Male [     ]     Female [     ]
- iv. Age: 20 – 30 [     ]     31 – 40 [     ]     Over 40 [     ]
- v. Level of education  
Secondary [     ]     Diploma [     ]     University [     ]  
Others specify \_\_\_\_\_
- vi. How long have you worked in this organization \_\_\_\_\_(years)

#### Section (b) Factors Affecting the Utilization of Mobile Banking

##### Factor 1: Security

1. a) How would you rank the following banking services on the basis of the level of security offered?

(1. Very secure     2. Secure     3. Insecure     4. Very insecure)

Service	Rank			
ATM banking	1	2	3	4
Branch banking	1	2	3	4
Mobile banking	1	2	3	4
Internet banking	1	2	3	4

b) If mobile banking is **insecure** or **very insecure**, please explain why

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2. Which of the following security factors affect the utilization of mobile banking?

(1. Strongly Agree 2. Agree 3. Uncertain 4. Disagree 5. Strongly Disagree)

Constraint		Rank				
A	Risks of fraudsters accessing accounts using mobile banking	1	2	3	4	5
B	Lack of transaction details in form of transaction slips	1	2	3	4	5
C	The use of PIN in mobile banking	1	2	3	4	5
F	Third party exposure in accessing clients financial information via mobile banking	1	2	3	4	5
G	The trust of the bank in keeping customers information private and confidential	1	2	3	4	5
H	Employees working for the bank pose a threat of insider fraud racket	1	2	3	4	5

Others (please specify)\_\_\_\_\_

**Factor 2: Usability**

3. How would you rank the following banking services on their degree of convenience?

Service	Very convenient	Convenient	Inconvenient	Don't know
ATM banking	1	2	3	4
Branch banking	1	2	3	4
Mobile banking	1	2	3	4

Internet banking	1	2	3	4
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4. Would you consider your mobile handset as user-friendly in conducting mobile banking transactions?

Yes  No

If No, please explain \_\_\_\_\_

**Factors 3 and 4: Cost and Technology**

5. Rank the following constraints regarding use of mobile banking?

(1. Strongly Agree 2. Agree 3. Uncertain 4. Disagree 5. Strongly Disagree)

Constraint		Rank				
A	The process enrolling subscribers in mobile banking services is complicated	1	2	3	4	5
B	The service instructions in mobile banking are hard to understand	1	2	3	4	5
C	Technical problems when using mobile banking services	1	2	3	4	5
D	Too many security features complicates mobile banking	1	2	3	4	5
C	Mobile banking services are expensive	1	2	3	4	5
D	The costs of mobile banking services far outweigh the benefits	1	2	3	4	5

Others (please specify) \_\_\_\_\_

**Section (c) Impact of These Factors Affecting Mobile Banking on Commercial Banks**

6. How has mobile banking utilization influenced the commercial banks in Kenya?

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7. In your own opinion, how can mobile banking be improved in Kenya ? Kindly explain

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8. Do you think there is a bright future of mobile banking in Kenya?

Yes

No

9. Rank the following statements in order of importance according to how you think customers perceive your services. Tick the appropriate one on the scale of 1 to 5, where 1- most important, 2-fairly important, 3- important, 4-not important and 5- Irrelevant.

Impact	1	2	3	4	5
Reduction of queues in banking halls due to anywhere anytime service					
Reduction of queues in ATMs due to anywhere anytime service					
Improved customer transaction management					
Fairly easily access information about product and service.					
Easier account management by customers					
Increased number of customer accounts due to range of services offered eg bill payment					
Improved customer satisfaction with way services are offered					
Using M-Banking service saves time.					
The customer finds M-Banking services useful					
The customer finds M-Banking a convenient service					
Using M-banking service enables the customer to accomplish their banking activities more quickly.					



M-banking has impacted positively on service delivery of the bank.					
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**Section (d) Challenges of Mobile Banking in Kenya**

10. What are the challenges facing mobile banking in Kenya? Tick the appropriate one on the scale of 1 to 5, where 1-most important, 2-fairly important, 3- important, 4-not important and 5- Irrelevant.

Others

(Specify and rank)\_\_\_\_\_

Challenges	1	2	3	4	5
Costs of the service					
Security					
Regulatory framework					
Customer awareness					

10. How would you rank the following factors in affecting utilization of mobile banking in Kenya? Tick the appropriate one on the scale of 1 to 5, where 1-most important, 2-fairly important, 3- important, 4-not important, and 5- Irrelevant.

Factors	1	2	3	4	5
Network coverage					
Cost					
Security					
Handset use					

Other (Specify and rank)

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11. Rank the following statements in order of importance according to how you think they affect the utilization of your m-banking services by customers. Tick the appropriate one on the scale of 1 to 5, where 1-most important, 2-fairly important, 3- important, 4-not important and 5- Irrelevant.

Challenges	1	2	3	4	5
Ease of set up / registration process					
Complexity of use of the services provided by the bank					
Range of services offered by the bank					
Capability of mobile phone					
Security during transaction (issues of Authentication and Non-repudiation)					
Loss of phone that contains financial data by user					
Cost of service to user					
Convenience of use of service by customer					

**Thank you for taking the time to complete this questionnaire.**