FACTORS AFFECTING ADOPTION OF MOBILE PHONE BANKING BY CUSTOMERS OF COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

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

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DEDICATION

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ABSTRACT

The purpose of this study was to establish the factors affecting adoption of mobile phone banking by customers of commercial banks in Kenya. Mobile banking in Kenya has been adopted by Kenyans however an evaluation of the factors that affect the adoption of mobile phone banking in Kenya has not been studied. This study intended to fill this gap. The study was guided by the following objectives: to establish factors that affect commercial banks customers' adoption of mobile banking; to establish the extent to which commercial bank customers in Kenya are using mobile banking; to establish the benefits of the adoption of mobile banking by commercial banks customers in Kenya and to establish challenges that affect banks customers' adoption of mobile banking.

The study employed a descriptive research design in which the population of the study were customers of all the commercial banks in Kenya. The study used a sample size of 60 customers to collect data using research questionnaires and the collected data was coded and analysed using means and standard deviations. The analysed data was presented in form of tables, pies and graphs.

The study found that most of the respondents were in one form of a relationship of another and were in some useful form of employment. The study also found out that the respondents used mobile banking because they found it cheap, safe and reliable to a greater extent. The study also found out that the respondent's colleagues, friends and family influenced the respondents to adopt and use mobile banking while the influence of the media on the adoption of mobile banking is not clear. The study also found out that mobile banking has a range of services, is convenient in doing bank transactions and

access to the bank service. saves time and has a good connection speed. The banks customers expect mobile banking to proceed with their expectations and to be secure. The customers also expect not to lose nay privacy and any amount of money when doing mobile banking transactions. The respondents were also willing technology and were aware of mobile banking services.

The study also found out the advantages for using mobile banking provides easy access bank account information, mobile banking is more secure than traditional banking, it is easy to learn to use the mobile banking mobile banking is safe and mobile banking system is user friendly. On the challenges to mobile banking the respondents indicated that they cannot transact when the mobile phone network is down, sometimes transactions are not online, some services are not available on mobile banking platform and phone software cannot access some utilities of mobile banking. On perceived risks the respondents indicated that they might not use mobile banking because they risk in mobile banking, agreed that their banks do not accept liability in case of loss, the technology of mobile banking is not easy to understand and information concerning my cell phone banking transactions can be tampered with by others.

The study found out that perceived usefulness and perceived ease of use (PEOU) has positive relationship in examining the intention to adopt mobile banking in Kenya. Similarly, relative advantage was found to be significant in determining the intention to use mobile banking. In addition, personal innovativeness (PI) has positive significant relationship towards the intention to adopt mobile banking services. However, social norms were found to have insignificant relationship with the intention to adopt the

service. Finally the study found out that there is a negative significant relationship between perceived risk (PR) and mobile banking adoption.

The research findings provide several important implications for banks, service developers, and software engineer with better strategic insights to design and implement mobile banking services to yield higher consumer acceptance towards mobile banking in Kenya. The study concludes and recommends that banks, service developers and software engineers should focus on the perceived usefulness, perceived ease of use, relative advantages and perceived risks of their mobile phone banking services and products. This can be achieved by developing better functions in terms of flexibility, security and accessibility features to enhance consumers' confidence to adopt mobile banking services.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The purpose of this study was to establish the factors affecting adoption of mobile phone banking by customers of commercial banks in Kenya. Highly competitive environment has forced banks to seek strategies to achieve competitive advantage. One of such strategies is Mobile banking. Mobile banking is a kind of electronic banking that applies Short Message System (SMS) and Wireless Application Protocol (WAP) services to facilitate customers in making online transactions (Lee and Benbasat, 2003). This is based on the mobile phone technology platform. Significant reasons that compel financial firms to provide mobile banking services are; appealing to trendy customers, reducing costs per transactions, gaining revenue from service fees, enabling new service channels, and supporting future customers (Krueger, 2001).

Mobile Banking has gained non-negligible relevance for banks today. Developments in the banking sector, e.g. increased competition on account of technological developments coupled with the process of globalization have produced new challenges for banks. Mobile Banking presents an opportunity for banks to retain their existing, technology-savvy customer base by offering value-added, innovative services. It might even help attracting new customers (Krueger, 2001). Further, Mobile Banking presents a chance to generate additional revenues. An effective approach to security involves a delicate trade-off between security and customer convenience. Often customers can perceive security requirements as an inconvenience (Ondrus and Pigneur, 2004).

According to the Sybase survey. more than sixty percent of banks worldwide had planned to offer mobile banking services by 2010 (Mallon, 2000). American bankers also predicted that U.S. households using mobile banking would reach 11 million households by 2009 (Sun Microsystems, 2008). Nevertheless, the KPGM survey indicates that less than ten percent of U.S. consumers had tried mobile banking. The slow growth rate of mobile banking usage shows lack of publicity and marketing on mobile service security and benefits which customers would gain (KPMG, 2009). This trend on the adoption of mobile was seen by 2011 where ninety percent of banks worldwide offered one form of mobile banking or another (World Bank, 2011).

The penetration of mobile phones is increasing in developing and poorer nations, where a large percentage of the global population resides. Financial institutions, which have had difficulty providing profitable services through traditional channels to poor clients, see opportunity in mobile banking (m-banking) as a form of 'branchless banking' (Ivatury and Mas, 2008), which lowers the costs of serving low-income customers for the banks. In countries like Kenya, Philippines and Indonesia mobile payments (m-payments) has been a successfully been employed in terms of providing affordable and convenient remittance and other financial services to all different sections of the population. Similarly, m-payments have also been able to extend affordable debit/credit services to the poor, which was otherwise only available through credit/debit cards. Formal banking reaches about 37 percent of the population across the globe, whereas mobile phone penetration is at 50 percent. Low-cost banking and financial services can attract a considerable number of customers who formerly could be served only at too high a cost (Datta, Pasa, and Schnitker, 2001). (Datta, Pasa, and Schnitker, 2001; Beshouri and

Gravråk, 2010). Studies done on the rate of adoption in Mobile Financial Services (MFS) in various parts of the world have shown that there are various bottlenecks. The studies found out that prospective customers around the world during the initial phase of adoption seemed slow in embracing mobile banking (Kleijnen, Wetzels, and Ruyter, 2004; Suoranta and Mattila, 2004). Others found that for example potential barriers to adoption of mobile banking relate to peoples' perceptions of its usefulness (value), its ease of use, its credibility and efficiency, and costs associated with banking transactions (Lai and Li, 2005; Liao, Shao, Wang and Chen, 1999; Liu, 2002; Luam and Lin; Yang, 2005).

1.1.1 Mobile banking

The terms m-banking, m-payments, m-transfers, m-payments, and m-finance refer collectively to a set of applications that enable people to use their mobile telephones to manipulate their bank accounts, store value in an account linked to their handsets, transfer funds, or even access credit or insurance products (Laukkanen and Pasanen, 2007). Finance-related services that are offered by employing mobile telecommunication technologies are generally referred to as "Mobile Financial Services" (MFS). They can be divided into two categories: "Mobile Payment" and "Mobile Banking" (Georgi and Pinkl, 2005). The term Mobile Banking refers to provision of banking and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions, to administer accounts and to access customized information (Tiwari and Buse, 2006).

Mobile banking is divided into various types of banking applications: (a) Mobile accounting refers to utilization of banking services that are specific to a particular account, via mobile telecommunication devices. The offered services may include remittance facilities, access administration and card management. (b) Mobile Brokerage refers to transaction-based, mobile financial services revolving around a securities account. The scope of offered services may include selling and purchasing of financial instruments (e.g. stocks, bonds or derivatives), order book administration and access administration. (c) Mobile financial information services refers to banking - and financial services that are non-transaction based and therefore of purely informational nature. The information may relate to either own bank account(s) or to market developments.

A bank may offer Mobile Financial Information services as an independent module, i.e. without offering Mobile Accounting or Mobile Brokerage services; but vice versa (i.e. accounting or brokerage services without offering information services) is not feasible. The scope of offered services may include, but is not limited to, facilities to make balance enquiries, order statements of account, issue threshold-alerts for transaction-limits, for balance-levels or for stock prices, receive confirmation on completion of placed orders and to receive or order up-to-date information on market developments (Tiwari and Buse, 2006).

1.1.2 Determinants of mobile banking by Customers

Although large investments have been made in the development of mobile phone banking systems, reports on mobile phone banking utilization show that potential users are not adopting the electronic service at the expected rate (Luarn and Lin, 2005). According to

the Gartner Hype cycle for consumer mobile applications (Gartner, 2007) report, the penetration rate of mobile phone banking is only about 1% to 5% of the target audience. From the perspective of banks that developed the mobile banking systems, a vastly improved number of customers must use mobile phone banking in order to justify their investments and operational expenditure (Crabbe *et al.*, 2009). Thus, understanding the determinants in the adoption behavior of customers of mobile phone banking is of high importance to marketing managers to return the cost of the initial investments.

Tan and Teo (2000) developed and tested a framework that identified factors that may influence the adoption of Internet banking. These factors can be adapted to the adoption of mobile banking and they include: (i) *Relative advantage:* Agarwal and Prasad (1997) demonstrate that the advantage an innovation has relative to another method is positively related to its rate of adoption. It is therefore possible to suggest that the advantages that mobile phone banking offers over other banking methods would affect its rate of adoption; (ii) *Perceived compatibility:* Compatibility refers to how well a technology fits with an individual's working and lifestyle, values and needs (Agarwal & Prasad, 1997). Those who feel banking via this channel is compatible with their lifestyle would more likely adopt mobile banking; (iii) *Perceived complexity:* The size of a mobile makes working with it difficult and frustrating for some, and so using a mobile for banking transactions may be perceived as complex.

Consequently, the adoption of mobile banking is likely to be negatively affected; (iv) *Trialability:* Potential adopters of a new technology who are allowed to experiment first will feel comfortable with it and thus be more likely to adopt it (Agarwal & Prasad, 1997;

Tan & Teo, 2000). Thus, the adoption of mobile banking is more likely if the technology is demonstrated to the user or if it can be used on a trial basis first; (v) *Mobile experience:* Tan and Teo (2000) showed that the greater the Internet experience of an individual, the more likely that Internet banking would be adopted. In terms of mobile banking, it follows therefore that those with greater mobile experience are more likely to use mobile banking. Given the simplicity of using a mobile for making and receiving calls, however, it is anticipated that the type of experience most likely to influence mobile banking adoption, are the more sophisticated uses, such as sending text messages (SMS's), performing calculations, and the playing of games; (vi) *Banking needs:* As with Internet banking adoption, it is expected that those who require a wide variety of banking products and services are more likely to want to adopt innovations such as mobile banking; (vii) *Perceived risk:* One of the major influencing factors around the establishment and use of new technologies for financial transactions is that of security and trust (McKnight, Choudhury, & Kacmar, 2002).

The need for security of personal details and financial information is therefore critical to the success of mobile banking. As a result, the lower the perception of risk involved in using mobile banking, the more likely that it will be adopted. (viii) *Self-efficacy:* This construct refers to the confidence an individual has in their ability to use a specific technology (Agarwal, Sambamurthy, & Stair, 2000). Agarwal et al. (2000) further demonstrate the importance of self-efficacy in their study of user behaviour with information technology. As with Internet banking it is expected that an individual who is confident in the skills required for mobile banking will be more likely to adopt it and (xiv) *Facilitating conditions (technology support*): This construct may be interpreted to

include support from both the cellular service providers as well as from the banks. Mobile banking is more likely to be adopted if there are better facilitating conditions.

1.1.3 Banking Industry in Kenya

The Banking industry in Kenya is governed by the Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK). The banking sector was liberalized in 1995 and exchange controls lifted. The CBK, which falls under the Minister for Finance docket, is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. As at December 2012 there were forty six banking and non-bank institutions, fifteen micro finance institutions and one hundred and nine foreign exchange bureaus. The banks have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banking sectors interests'. The KBA serves a forum to address issues affecting members.

Over the last few years, the Banking sector in Kenya has continued to growth in assets, deposits, profitability and products offering. The growth has been mainly underpinned by; an industry wide branch network expansion strategy both in Kenya and in the East African community region and the automation of a large number of services and a move towards emphasis on the complex customer needs rather than traditional off-the-shelf banking products. Players in this sector have experienced increased competition over the last few years resulting from increased innovations among the players and new entrants into the market (CBK, 2012). Post-independence, the Kenyan banking sector was largely driven by the local operations of foreign institutions such as Barclays and Standard

Chartered. A very different landscape exists today, where local institutions abound and mostly target the retail market.

There are approximately 6.3 million bank accounts in Kenya. With a total population of more than 36 million people, there is clear scope for further penetration of the market. Nevertheless, this figure represents significant growth in the banking industry from the mere 2.6 million accounts that were open at the end of 2005. There are currently nine banks or the holding companies of banks listed on the Nairobi Stock Exchange. These had a combined market value in excess of KShs 270 billion (USD 3.6 billion) at the end of August 2009. Regional integration is taking hold within Kenya's banking sector. The latest foray into Kenya by Nigeria's United Bank for Africa (UBA) signifies West Africa's increasing appetite to participate in East African markets. UBA is the second bank from West Africa to enter into the Kenyan banking industry. Lome-based Ecobank entered Kenya last year after acquiring a 75 per cent stake in EABS Bank. At the same time as regional integration, institutions from outside the African continent are moving into the Kenyan market.

This is no more prevalent than amongst institutions from the Gulf region with a unique product offering: Gulf African Bank and First Community Bank, each an Islamic bank, commenced operations in Kenya in 2008 offering Sharia-compliant banking services. Their combined operations now represent approximately 1 percent of Kenya's gross banking assets. According to Financial Sector Deepening Kenya (FSD Kenya only 19% of adult Kenyans reported having access to a formal, regulated financial institution while over a third (38%) indicated no access to even the most rudimentary form of informal

financial service. This leaves a percentage of more than 80% outside the bracket of the reach of mainstream banking. Furthermore a Central Bank of Kenya survey CBK (2008) sets the number of conventional branches at 876. In addition to these branches there are only 1424 ATM machines in total implying that within the short duration of operation the M-banking outlets have tripled that of traditional banks. Commercial banks in Kenya have tried to fill up this un-served population by introducing mobile phone banking services to the poor.

In Kenya mobile phone banking is a fast growing sector in the banking industry. Many banks in the world are trying to take advantage of the technology in mobile phones and introduce the service as means of providing fast and efficient service. Since owning a mobile phone is becoming prevalent, banks in Kenya are trying to adjust themselves to the use of mobile phone banking to serve their present customers (Kenya Information and Communication Policy, 2011). Several banks have introduced the use of mobile phone banking; these include Co-operative bank of Kenya, which has the M-banking, National Bank with the Simple-banking, Kenya Commercial Bank with Mobi-bank, and the Equity bank with M-Kesho among others. These banks have services such as easy access to check balances, payment and subscription through mobile phones using SMS. They are also in collaboration with the network providers to offer services such as topping up of credit and payment of utilities (Kenya Information and Communication Policy, 2011).

However the number of bank customers who adopt and actively use mobile phone banking services offered by the banks is still relatively small (Kenya Information and Communication Policy, 2011). The reason behind the comparatively low usage rate could

be found in the limitations of the system (tiny screens and keypads and slower speeds) compared with Internet banking and uncertainty about the security of wireless transactions (Luarn and Lin, 2004). Even though mobile banking technology and applications are available, international usage rates have remained fairly low. Therefore, to expand customers' acceptance of mobile banking, the banking industry must identify the factors affecting customers' intention to use mobile banking.

1.2 Statement of the Problem

Although mobile banking yields enormous benefits, some scholars found that mobile banking adoption among banks customers remains small (Donner and Tellez, 2008 and Laukkanen, 2007). Meanwhile, Kleijnen *et al.* (2007) further indicated that the usage of mobile banking has yet to meet competitive expectations. Despite the fact that numerous mobile banking adoption studies have been investigated by Luarn and Lin (2005), Mattila (2003) and Zhou et al. (2010), most of them were conducted in countries such as Korea (Chung and Kwon, 2009), Singapore (Riquelme and Rios, 2010), Brazil (Laukkanen et al 2010), Taiwan (Luarn and Lin, 2005), and China (Wang et al. 2010) with relatively little attention paid to developing countries like Kenya. All of 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. Sheikh (2008) studied the impact of performance contracting on operational performance in the banking industry: a case of multinational banks in Kenya. Gichuki (2009) did a survey of the

value of ICT on the banking industry in Kenya. Kiemo (2009) studied evaluation of security of information systems in the Kenyan banking industry. Kimetto (2009) studied a survey of challenges in implementation and application of credit card systems in the banking industry in Kenya. 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. None of these studies assessed the factors affecting the adoption of mobile banking by customers in Kenya. This study therefore seeks to fills in the knowledge gap by addressing the following research questions. To what extent has mobile banking been adopted in banks in Kenya? What are the benefits of mobile banking adoption by customers in Kenya? What are the challenges that affect customers of banks in adopting mobile banking in their operations?

1.3 Research Objectives

The general objective of the study is to establish the factors affecting the adoption of mobile banking by customers of Banks in Kenya.

1.3.1 Specific Objectives

The study will focus on the following objectives:

(a) To establish factors that affect commercial banks customers' adoption of mobile banking.

(b) To establish the challenges that affect commercial banks customers' adoption of mobile banking.

(c) To establish the extent to which bank customers in Kenya are using mobile banking.

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(d) To establish the benefits of the adoption of mobile banking by Commercial banks customers in Kenya.

1.4 Value of the Study

First, the government and other institutions (like the Central Bank of Kenya) involved in policy formulation will find the findings of this research useful since it will contribute towards the formulation of positive fiscal policies that are relevant to the forces influencing the banking industry's performance in Kenya.

Secondly, it will be important to banking industry, banks managers, their customers, the researchers as well as academicians. The study will assist commercial bank management to understand and provide them with information on how to increase mobile phone banking adoption to increase profitability.

To researchers and academics, the study will provide reference material to future researchers on banking and information technology. The study will contribute to theories of technology adoption and to knowledge on why customers adopt technology.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter will review the various literatures that are related to the study and sentiments of various authorities in the area of study. Commonly, mobile banking is defined as "a channel whereby the customer interacts with a bank via mobile device, such as mobile phone and Personal Digital Assistant (PDA)" (Barnes and Corbitt, 2003) Mobile phone banking (Internet banking using mobile devices, also known as M-Banking, mbanking, SMS Banking etc.) can perform account balances and transaction history inquiries, funds transfers, and bill payments via mobile devices such as cell phones, smartphones, and PDAs (personal digital assistants) (Laukkanen, 2007a; Turban, King, Viehland, & Lee, 2006). Acceptance and adop- tion of mobile banking differs from adoption of non-mobile Internet banking is at least two ways. First, the difference between mobile and non-mobile Internet banking is the pace of evolution, with mobile banking evolving much faster than non-mobile Internet banking (Laukkanen, 2007a).

Information systems (IS) researchers have proposed that mobile banking can be considered as one of the most significant technological innovation, which is emerging as a key platform for expanding access to banking transactions via mobile or handheld devices, and operating wireless communication technologies (Herzberg, 2003; Kleijnen, Wetzels, & Ruyter, 2004; Laukkanen, 2007b; Laukkanen & Lauronen, 2005). Mallat, Rossi, and Tuunainen (2004) claimed that mobile banking services provide customer value creation due to being inherently time and place independent, as well as their effort-saving qualities. Innovation diffusion theory (Rogers, 1995) posits that perceived

innovation attributes (like relative advantage in innovation theory) influence individual usage of an innovation. Technological innovations have been studied using this perspective (e.g., Agarwal & Prasad, 1997; Moore & Benbasat, 1991; Papies & Clement, 2008; Tan & Thoen, 2001; Teo & Pok, 2003). Mobile banking may have new features (such as ubiquity, flexibility and mobility) compared to conventional banking channels (e.g., automated teller machine, phone-banking, non-mobile Internet banking), however, the effects of innovation attributes deserve attention have not been fully understood in the adoption of mobile banking (Sulaiman, Jaafar, & Mohezar, 2007).

Currently, there are about 8 million users of M-banking services compared to 4 million people who hold accounts in conventional financial institutions in Kenya (CBK 2008). The tremendous increase in number of people adopting M-banking has been attributed to ease of use and high number of mobile phone users. This is consistent with the theory of consumer choice and demand as conceptualized in Au and Kauffman (2008) in relation to mobile payments. Based on their observation, customers can choose to adopt a particular banking technology such as M-banking, perceived to offer such advantages as ease of use.

The framework for mobile banking in Kenya was laid by the introduction of M-Pesa by safaricom. M-Pesa is a money transfer system operated by Safaricom, Kenya's largest cellular phone provider. M-Pesa allows users to exchange cash for "e-float" on their phones, to send e-float to other cellular phone users, and to exchange e-float back into cash. The story of the growth of mobile telephones in Africa is one of a tectonic and unexpected change in communications technology. From virtually unconnected in the

1990's, over 60 percent of Africans now have mobile phone coverage, and there are now over ten times as many mobile phones as landline phones in use (Aker and Mbiti, 2010). Even with the story of mobile phones' growth as a background, the growth of M-Pesa is startling. Within eight months of its inception in March 2007, over 1.1 million Kenyans had registered to use M-Pesa, and over US$87 million had been transferred over the system (Safaricom, 2007). By September 2009, over 8.5 million Kenyans had registered to use the service and US$3.7 billion (equivalent to 10 percent of Kenya's GDP) had been transferred over the system since inception (Safaricom, 2009). This explosive growth was also mirrored in the growth of M-Pesa agents (or service locations), which grew to over 18,000 locations by April 2010, from a base of approximately 450 in mid-2007 (Safaricom, 2009 and Vaughan, 2007). By contrast, Kenya has only 491 bank branches, 500 postbank branches, and 352 ATMs (Mas and Ng'weno, 2009).

Mobile payments have had incredible uptake in Kenya because they allow both the banked and the unbanked to transfer money more conveniently, more safely, and at a much lower cost than through formal banking services or other money transfer methods. In Kenya, M-PESA, launched on March 6, 2007, is the dominant m-payment system. It has experienced phenomenal growth since then, greatly exceeding expectations. M-PESA's initial goal was to acquire 200,000–250,000 subscribers in the first year12. Instead, it achieved that goal in just four months. In fact, M-PESA attained 10 times the original goal in one year, registering 2 million customers. Today the more than 7,000 M-PESA agents serving a country of 39 million Kenyans and customer base of 6 million far exceed the 887 bank branches and 1435 automatic teller machines (ATMs) in Kenya. As of the end of February 2009, the monthly value of person-to-person money transfers was

KES 14.5 billion (USD 190.3 million), with the cumulative value of these money transfers since M-PESA's launch reaching KES 118 billion (USD 1.5 billion).

Globally, banking and financial industry has shown tremendous growth in volume and complexity (Leeladhar, 2006) during last few decades. Noticeably, the outreach of the banking sector has been found to vary across countries (Beck, Demirguc-Kunt, and Peria, 2007). The Financial Access Initiative (FAI), a research consortium based at New York University, has identified that 2.5 billion adults worldwide do not have a savings or credit account with either a traditional (regulated bank) or alternative financial institution (such as a microfinance institution) (Chaia, et al., 2009). This scenario has also emerged because of the high cost of maintaining bank branches and low volume of transactions in the rural areas, given their distance from nearest urban centers and the low population density, making branch based banking in such areas unviable.

On the other hand, penetration of mobile technology has been substantial in the past few years and is expected to increase in the future. Although the actual data may vary across regions, but this has emerged as the global phenomenon as the mobile penetration is increasingly deepening in developing and poorer nations, where a large percentage of the global population resides. Financial institutions, which have had difficulty providing profitable services through traditional channels to poor clients, see opportunity in mobile banking (m-banking) as a form of 'branchless banking' (Ivatury and Mas, 2008), which lowers the costs of serving low-income customers for the banks. In countries like Kenya, Philippines and Indonesia mobile payments (m-payments) has been a success story in terms of providing affordable and convenient remittance and other financial services to all different sections of the population. Similarly, m-payments has also been able to

extend affordable debit/credit services to the poor, which was otherwise only available through credit/debit cards.

In emerging markets across the globe, formal banking reaches about 37 percent of the population, compared with a 50 percent penetration rate for mobile phones. About one billion people in emerging markets have a mobile phone but no access to banking services; by 2012 this population will reach 1.7 billion (Beshouri and Gravråk, 2010). It is said that low-cost banking and financial services can bring into its fold a considerable group of consumers who formerly could be served only at too high a cost (Datta, Pasa, and Schnitker, 2001). On the contrary, studies have shown that there had been bottlenecks in the rate of adoption in MFS in various parts of the world. For countries like Taiwan where the rate of adoption of mobile phones had been very high, the rate of adoptability for m-banking was quite slow till 2003 when only one percent of the banking transactions happened through mobile handsets (Luarn and Lin, 2005). Prospective customers around the world during the initial phase seemed slow in embracing mobile banking (Kleijnen, Wetzels, and Ruyter, 2004; Suoranta and Mattila, 2004), although there may be a geographical discrepancy in its acceptance level (Mallat, Rossi, and Tuunainen, 2004).

2.2 Factors that drive Mobile Banking adoption

The characteristics of mobile technology necessitate some requirements needed to support mobile banking proliferation. However, there are some hindrances that deter mobile phone users to use the technology to its optimal level:

a) Technology issues

The diverse devices available need to support mobile banking applications effectively and seamlessly. The hardware architecture and operating systems on the mobile devices should be able to support the applications. The current systems have their failings while supporting different applications and interfacing on different communication networks (Luarn, 2005). Data transmission needs to be compressed to save on costs.

b) User-interface issues

There ought to be an ability to personalise the display to appeal to the likes of different users. Drill down facility should be in place for details are required in case the user wishes to obtain more information for a transaction; the design should allow them to drill into the details (Pedersen, Methlie and Thorjbornsen, 2002). The mobile devices lend themselves well to allow the user to get timely alerts and this feature needs to be judiciously used to add value for the customers. The users have got used to extensive features in electronic banking (Dholakia and Dholakia, 2002). They must not be handicapped to get similar features through mobile banking; any design constraint which inhibits the features will impede widespread usage.

c) Security issues

One of the most important factors that a user considers before opting for a technology is security (Wang et al., 2006). Banking is the most important aspect of anyone's life and potential loss of money could hamper their experience with the institution. Mobile technology is potentially more vulnerable to interception as it is propagated through wireless mode. However, some studies show that "using mobile phone in banking is trustworthy" (Mattila, 2002). Risk is identified as "a perception of consumer, not a

characteristic of a product" (Fain and Roberts, 1997). It is known that risk/security can change a "consumers' perception to use technology" (Laforet and Li, 2005). In a research conducted by Wang et al. (2006) it was identified as a major concern in adoption of mobile banking as "individuals' may worry about security issues such as data transmitted and resultant output, loss of connection risk (Kuisma et al., 2007; Black et al., 2001) and performance mistakes (Laukkanen and Lauronen, 2005; Black et al., 2001). There needs to be a strong encryption techniques used to ensure security of sensitive data and functionalities of mobile banking. Security controls need to be built into the application functions to disallow unauthorised and fraudulent usage. Security should be fool proof but efficient. It should not infringe on the time taken for authorisations as it would make usage more costly and prohibitive (Brown et al., 2003; Laukkanen and Lauronen, 2005). Many researchers have argued that security is not the only major concern that restricts customers from accessing their mobile banking services (Suoranta, 2003; Laukkanen and Lauronen, 2005; Soroor, 2005). Other barriers include mobility, personalization, localisation and reachability (Souronta, 2003).

d) Usability issues

Venkatesh (1999), Compeau, Higgins and Huff (1999) and Ellen, Bearden and Sharma (1991) had examined the aspect of resistance of users to accept innovations and changes. A major limitation to usability of mobile devices has been the inconvenience in inputting data. The latest generation of devices have been able to work around these limitations by the introduction of touch screen technology. Banking applications would need to address this issue to provide the consumers ease of use. Applications would need to have the facility of continuing usage even after disruption of mobile communications without

compromising on security (Srite and Karahanna, 2006). Potential to use applications offline would enhance their usability. The applications must lend 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.

A major limitation to usability of mobile devices has been the inconvenience in inputting data. The latest generation of devices have been able to work around these limitations by the introduction of touch screen technology. Banking applications would need to address this issue to provide the consumers ease of use. Applications would need to have the facility of continuing usage even after disruption of mobile communications without compromising on security (Srite and Karahanna, 2006). Potential to use applications offline would enhance their usability. The applications must lend 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.

e) Cost issues

A major impediment to widespread mobile banking usage is its cost (Tarasewich, Nickerson and Warkentin, 2002). For carrying out banking through a mobile phone there is a cost associated with buying a handset and getting connected through a service provider (Nah, Siau and Sheng, 2005). Ram (1987) and Ram and Sheth (1989) coined the term "performance-to-price" advantage for users to adopt a technology.

Technology Acceptance Models

Technology Acceptance Model (TAM) is basically an information systems theory that ideally models how users come to accept and use a technology. This model suggests that when presented with a new technology, the user's decision about how and when they will

use it is influenced by a number of factors, notably: Perceived usefulness (PU) - This was defined by Davis (1989) as "the degree to which a person believes that using a particular system would enhance his or her job performance". Perceived ease-of-use (PEOU) - Davis defined this as "the degree to which a person believes that using a particular system would be free from effort" (Davis 1989). Technology Acceptance Model (TAM) (F. D. Davis, 1989; L. D. Davis, et al., 1989), is adapted from the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). While the TRA is a general theory of human behavior, the TAM is specific to Information Systems (IS) usage (Mathieson, Peacock, and Chin, 2001). The TAM posits that a user's adoption of a new information system is determined by that user's intention to use the system, which in turn is determined by the user's beliefs about the system. As Davis (1989) noted, future technology acceptance research must address how other variables affect usefulness, ease of use and user acceptance. Therefore, perceived ease of use and perceived usefulness may not fully explain behavioral intentions towards the use of mobile banking, necessitating a search for additional factors that can better predict the acceptance of mobile banking.

However, the TAM has been criticized for not fully capturing why mobile phone users do not adopt mobile banking, which in the present case is mobile banking (T. M. Lee and Jun, 2007). Researchers have noted that the TAM omits variables that may be important predictors of IT/IS usage (Mathieson, et al., 2001). The TAM is also limited in assuming that peoples' willingness and determination to adopt technology for a specific purpose is sufficient for adoption (Luarn and Lin, 2005). (T. M. Lee and Jun, 2007) argued that TAM should also be able to analyze factors affecting adoption intentions beyond

perceptions of usefulness, ease of use, and social norms. Theory of planned behaviour (TPB) includes constructs that do not appear in the TAM. It had been suggested that subjective norms and perceived behavioral control overlap only minimally within the TAM's constructs (Mathieson, 1991; Taylor and Todd, 1995). However, TPB is not specific to IS usage and is less parsimonious than the TAM. Also, TPB requires unique operationalizations in each situation in which it is used (Mathieson, et al., 2001). Prior studies found that the TAM appeared to be superior to TPB in explaining behavioral intention to use an IS, and that the decomposed TPB, which integrates the TPB and TAM, is better than the TAM but the difference is not substantial (Chau and Hu, 2001).

The adoption of technology by an organisation is guided by several technology adoption theories. Many technology acceptance theories and models have been developed or used to study information technology acceptance. These models include: The Theory of Reasoned Action (Fishbein et al., 1975), the Technology Acceptance Model (Davis, 1989) and extended TAM (Venkatesh and Davis, 2000), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), the Motivational Model (Davis, et al, 1992), the Theory of Planned Behavior (Ajzen, 1991) and the model combining TAM and the Theory of Planned Behavior (Taylor and Todd, 1995). In the view of the Theory of Reasoned Action (TRA), an individual's behavior intentions determine his or her actual behaviour. Behaviour intention is in turn determined by the individual's attitude toward this behavior and subjective norms with regard to the performance of this behavior (Fishbein and Ajzen, 1975). The TRA is based on the assumption that individuals are rational decision makers who constantly calculate and evaluate the relevant behavior beliefs in the process of forming their attitude toward the

behavior. Fishbein and Ajzen (1975) define attitude as "an individual's positive or negative feelings (evaluative affect) about performing the target behavior". Individuals form attitudes toward a behavior by evaluating their beliefs through an expectancy-value model. Individuals multiply the normative belief strength by the motivation to comply with that referent, and sum the entire set of resulting weights to determine their behavioral intention.

Technology Acceptance Model and Its Extensions: Based on the Theory of Reasoned Action (TRA), Davis (1989) develops the Technology Acceptance Model to find out what factors cause people to accept or reject an information technology. He suggests that perceived usefulness and perceived ease of use are the two most important individual beliefs about using an information technology. 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 finds that perceived usefulness is the strongest predictor of an individual's intention to use an information technology. The TRA is used to predict an individual's behavior only in a real voluntary situation, not in a mandatory context. Ajzen (1991) develops the Theory of Planned Behavior (TPB) to extend TRA to consider the mandatory situation. He adds a new construct of perceived behavioral control in TPB. Perceived behavioral control is defined as "the perceived ease or difficulty of performing the behavior" (Ajzen 1991, p. 188). In the context of IS research, perceived behavioral control is defined as "perceptions of internal and external constraints on behavior" (Taylor and Todd 1995, p. 149). Combined TAM and TPB: Taylor and Todd (1995) develop a hybrid model by combining the predictors of TPB with the constructs of perceived usefulness and ease of use from TAM. This model is also called the

Decomposed Theory of Planned behavior because the belief structure is decomposed in the model. The attitude is decomposed to include perceived usefulness, perceived ease of use and compatibility. The normative belief structure includes peer influence and superior influence. The control belief structure includes self-efficacy, resource facilitating conditions and technology facilitating conditions. This study will adopt the Technology Acceptance

2.2.2 Perceived Usefulness and Perceived Ease of Use

With the advancement of technology, the attempts to examine individual's acceptance in new technology has emerged as one of the most fast growing area in IS research (Hsu, and Lu, 2004). According to Davis (1989), the acceptance and rejection of technology, acceptance can be predicted by using TAM which demonstrates the relationship connecting belief, attitude (use of a certain information system) and action purpose (a standard to measure if personnel would use the system). However, Mathieson (1991) argued that it is insufficient to rely only on both constructs of perceived usefulness (PU) and perceived ease of use (PEOU) in investigating user's technology acceptance. Hsu and Lu (2004), in their study supported that both factors of TAM model were not exactly reflecting the acceptance of mobile banking. Hence, Riquelme et al. (2010), suggested there are other possible factors that might affect mobile banking adoption such as perceived risk (Chung and Kwon, 2009), perceived uncertainty (Laforet and Li, 2005), perceived system quality (De Ruyter et al. 2004), financial cost (Yang, 2005), perceived usefulness and perceived ease of use (Chung and Kwon, 2009). This study considers all of these factors.

2.2.3 Social Norms

Pedersen and Ling (2002) emphasized that the construct of social influence cannot be ignored in any adoption model. Thus, it is not surprising that social norms have been widely validated in group-oriented IT (Taylor and Todd, 1995) email acceptance (Gefen and Straub, 1997), online games (Hsu, and Lu, 2004), internet banking (Chan and Lu, 2004) and mobile banking adoption (Riquelme and Rios, 2010). In some research, social norms are also known as subjective norms (Probst et al. 2006). It is defined as an individual's "perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein and Ajzen, 1975).

2.2.4 Relative Advantages

As compared to other banking channels, mobile banking offers convenient benefits in terms of mobility which are not available by traditional off-line banking and non-mobile internet banking (Anckar and D'Incau, 2002; Lee and Benbasat, 2003 and Valacich et al. 2004). For example, the benefits can be viewed in terms of greater convenience, user friendliness, shorter waiting time, and faster response (Dabholkar and Bagozzi, 2002; Brown et al, 2005; Mick and Fournier, 1998 and Francis et al. 2002). In other words, the more individuals perceived the relative advantages from mobile banking, individual will tend to have more positive attitudes towards it (Puschel and Mazzon, 2010). This is important to reduce consumers' social and psychological risks perception (Larsen et al, 2003).

2.2.5 Perceived Risk

Perceived risk is the "uncertainty about the outcome of the use of the innovation" (Gerrard and Cunningham, 2003). In fact, perception of risk among individuals has been

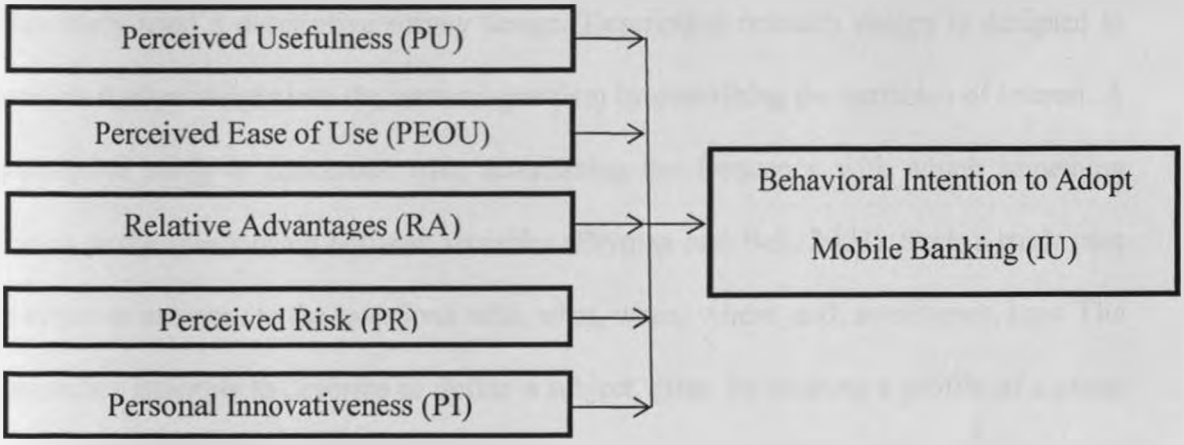
proved in technology adoption literature as an important element in acquiring new technology or services (Laforet and Li, 2005). With the considerations of security issues, Riquelme and Rios (2010) further supported that risk factor is a vital element in investigating mobile technology adoption. As mobile banking is revolutionized from internet banking, therefore mobile banking tends to have similar risks as internet banking (Larsen et al 2003). Despite of the risks, the issues of lose and theft of daily transactions via mobile phones lead to the greatest risk as compared to internet banking (Riquelme and Rios, 2010). Mobile phone theft and reuse issue is a major problem in many countries around the globe. Inevitably, such trend is wide spreading and increasing in Kenya. This implies that the greater the potential of loss of theft resulting higher perceptions towards security risk (Mitchell, 1999). Subsequently, this discourages users to adopt new technology (Brown et al 2005). A recent studies conducted by Luo et al. (2010) found that user's perception of risk is a crucial driver to determine innovative technology acceptance. The findings show that perceived risk has negative significant relationship towards behavioral intention on mobile banking adoption.

2.3 Conceptual Framework

A conceptual framework is a logically developed, described and elaborated network of interrelationships among variables integral in the dynamics of a situation being investigated. It explains the theory underlying these relationships and describes the nature and direction of these relationships. A variable is a measurable characteristic that assumes different values among the subject. It is therefore a logical way of expressing a particular attribute in a subject (Mugenda and Mugenda 2003). A dependent variable is the variable of primary interest to the researcher. The dependent variable will be the

employee performance. An independent variable is the one that influences the dependent variable in either a positive or negative way. The independent variable in this case will be the work environment. The conceptual framework of this study is based on the factors affecting the adoption of mobile banking and the TAM model, therefore the concept that the adoption of mobile banking is constructed around the following variables:

Figure 2.1: Conceptual Framework



Independent Variables **Dependent Variables**

Source: Author, 2012

2.4 Summary

According to the literature reviewed above, themes have been identified for the most important factors affecting the usage of mobile banking. These are: cost, security, quality of service and attitude toward mobile banking. As discussed in section 2.2.1 this study would use the TAM model to base the research model on. The methodology chapter shall elucidate a few additional constructs.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology used in the study and covers the research design, population, sampling, data collection and data analysis.

3.2 Research Design

This study used a descriptive survey design. Descriptive research design is designed to provide further insight into the research problem by describing the variables of interest. A descriptive study is concerned with determining the frequency with which something occurs or the relationship between variables (Bryman and Bell, 2003). Such a study tries to discover answers to the questions who, what, when, where, and, sometimes, how. The researcher attempts to describe or define a subject, often by creating a profile of a group of problems, people, or events. Descriptive research designs are used to develop a snapshot of a particular phenomenon of interest. Descriptive studies usually involve large samples. The focus of descriptive research is the careful mapping out of circumstances, situation or set of events to describe what is happening or what happened (Creswell, 2002).

3.2 Population

The target populations of this study were the customers of the 43 commercial banks in Kenya who have adopted the use mobile banking.

3.3 Sampling

The sample size was drawn from the population of over 500 respondents through judgemental sampling to arrive at 60 respondents.

3.4 Data Collection

Data was collected by use of questionnaires. The questionnaires were mailed to the respondents. The questionnaire consists of several sections: Section A: on the demographic factors; Section B: on factors relating to adoption; Section C: on the extent of use; Section D: on the benefits of mobile banking; Section E: on the challenges of mobile banking.

3.5 Data Analysis

Data was analyzed through the statistical package for social sciences (SPSS) package. Descriptive statistics, measures of central tendency and measure of dispersion were used to analyze the data. The measure of central tendency that was used in this study was the mean. This was used on Section A, B, C, D and E. Measures of dispersion that were used in this study included: variance and standard deviation on such elements of the questionnaire like the perceived usefulness, social norms, relative advantages, perceived risk and personal innovativeness. Social demographic details of the respondents were analyzed. The data was in percentages, mean scores and presented in tables and figures. Qualitative data from open questions was presented in prose form.

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

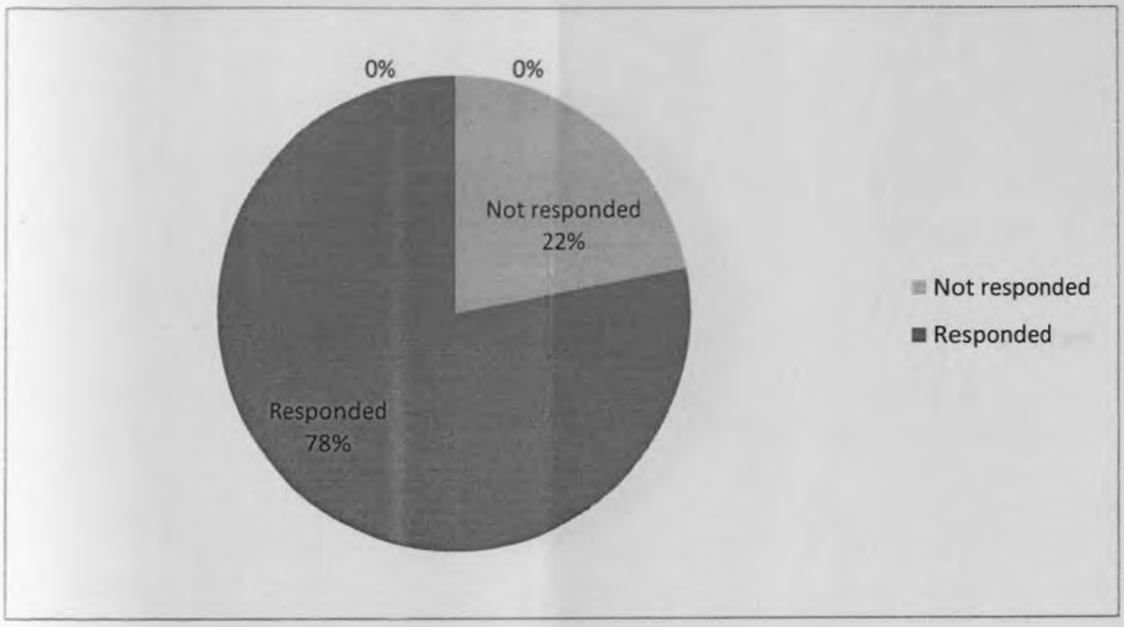
This chapter presents the analysis and findings of the study as set out in the research methodology. The research data was gathered exclusively through questionnaires as the primary research instrument. The questionnaire was designed in line with the research objectives of the study. To enhance the quality of the obtained data, Likert type questions were used whereby respondents indicated the extent to which the variables were practiced in a five point Likerts scale. The data has then been presented in form of quantitative, qualitative form followed by discussions of the data results. The chapter concludes with a critical analysis of the findings.

4.2 Respondents' Demographic Characteristics.

4.2.1 Response Rate

The study targeted 60 respondents in collecting data. Results in Figure 4.1 show that, 47 out of 60 target respondents filled in and returned the questionnaire contributing to a 78.3% response rate. This response rate was excellent and representative and conforms to Mugenda and Mugenda (1999) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This acceptable response rate was enabled by the researcher with the engagement of research assistants to administer the questionnaires. This survey can therefore be said to be successful and acceptable.

Figure 4.1: Response Rate

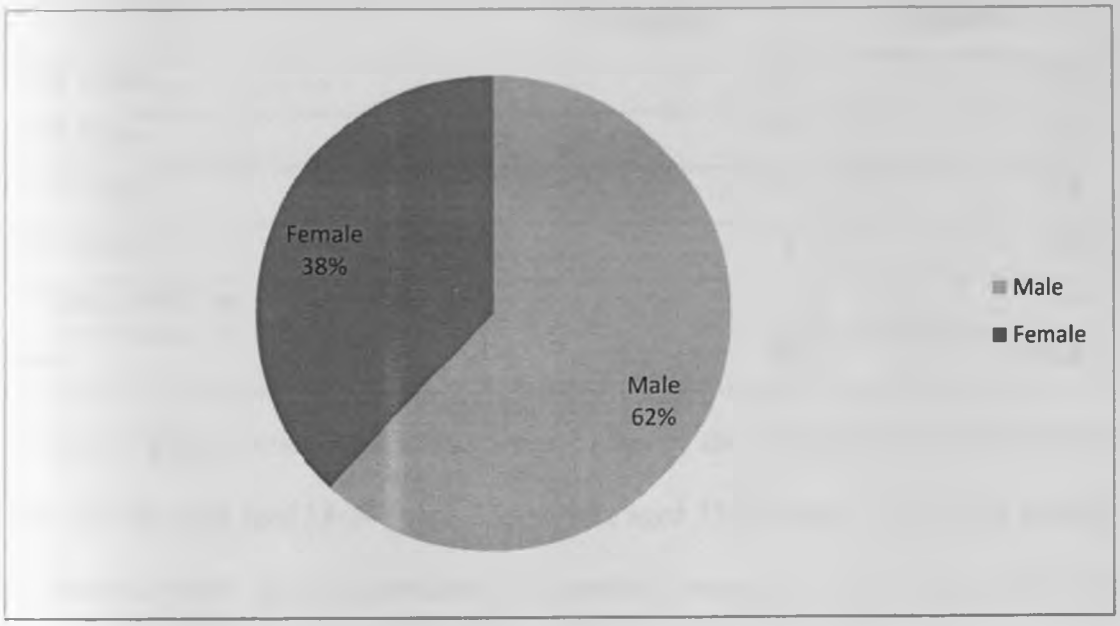


Source: Researcher, (2011)

4.2.2 Gender of the Respondents

The study sought to find out the gender of the respondents. The findings are shown in figure 4.2.

Figure 4.2: Gender of the Respondents



The results shown in figure 4.2 indicate that the majority of the respondents (62%) were male while the minority (38%) were female. This indicates that the majority of people who use mobile phone banking are male.

4.2.3 Age of the Respondents

The study sought to find out the ages of the respondents. The findings are shown in table 4.1.

Table 4.1: Age of the Respondents

	Frequency	Percent
18-24 Years	12	25.5
25-34 Years	15	31.9
35-49 Years	11	23.4
50-64 Years	6	12.8
65 Years And Over	3	6.4
Total	**47**	**100.0**

The results shown in table 4.1 indicate that 31.9% of the respondents were aged 25-34 years, 25.5% were aged 18-24 years, 23.4% were aged 35-49 years, 12.8% were aged 50-64 years and 6.4% of the respondents were aged 65 years and over. This indicates that most of the people who used mobile phone banking were young and aged between 18 to 49 years.

4.2.4 Marital Status of the Respondents

The study sought to find out the marital status of the respondents. The findings are shown in table 4.2.

Table 4.2: Marital Status of the Respondents

	Frequency	Percent
Married	14	29.8
Widow	10	21.3
Single	12	25.5
Cohabitation	9	19.1
Divorced	2	4.3
Total	**47**	**100.0**

The results shown in table 4.2 indicate that most of the respondents were married as shown by 29.8% of the respondents, 25.5% were single, 21.3% were widowed, 19.1% were in cohabitation while 4.3% were divorced.

This indicates that most of the respondents were in one form of a relationship of another.

4.2.5 Occupation of the Respondents

The study sought to find out the occupation of the respondents. The findings are shown in table 4.3.

Table 4.3: Occupation of the Respondents

	Frequency	**Percent**
Executive	9	19.1
Farmer	9	19.1
Worker	3	6.4
Pensioner	2	4.3
Not At Work	6	12.8
Entrepreneur	6	12.8
White-Collar Worker	7	14.9
Public Servant	2	4.3
Student	3	6.4
Total	**47**	**100.0**

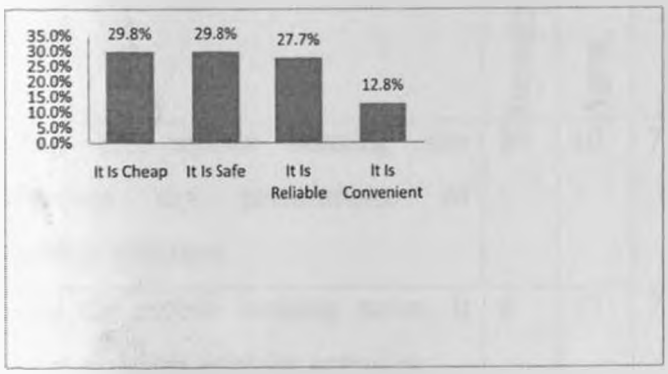
The results shown in table 4.3 indicate that 19.1% of the respondents were executives and farmers respectively, 12.8% of the respondents were also entrepreneurs and not at work respectively, 14.9% were white-collar workers, 6.4% were workers, 6.4% were students, 4.3% were pensioners and 4.3% were public servants.

This indicates that most of the respondents were engaged in one form of useful employment or another. In line with the context of this study, the results of the income level clearly represent the Bottom of the Pyramid (BOP) economic segment who represent the majority of people in Kenya.

4.2.6 Reasons for Using Mobile Phone Banking

The study sought to find out the respondents reasons for using mobile phone banking. The findings are shown in figure 4.3.

Figure 4.3: Reasons for Using Mobile Phone Banking



The results shown in figure 4.3 indicate that 29.8% of the respondents considered mobile banking cheap, 29.8% considered mobile banking safe, 27.7% of the respondents considered it reliable while 12.8% considered it convenient.

This indicates that the respondents used mobile banking because they found it cheap, sage and reliable to a greater extent. However they also use mobile banking because they considered it convenient to a lesser extent.

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4.3 Factors Affecting The Adoption of Mobile Phone Banking

The study sought to find out the factors affecting the adoption of mobile phone banking. The results are elaborated in the following subsections.

4.3.1 Perceived Usefulness

The study sought to find out the perceived usefulness of mobile phone banking from the respondents. The findings are shown in table 4.4.

Table 4.4: Perceived Usefulness

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
using the mobile banking site improves my performance of banking activities	29	10	7	1		1.5745	0.82738
using the mobile banking makes it easier to do my banking activities	6	33	7	1		2.0638	0.60449
using the mobile banking enables me to accomplish banking activities more quickly	18	16	9	2	2	2.6170	4.63237
I find mobile banking useful for my banking activities	16	19	7	5		2.0213	.96660
My interaction with the mobile banking is clear and understandable	14	20	9	4		2.0638	.91851
I find mobile banking flexible to interact with	18	17	7	4	1	2.0000	1.04257

The results in table 4.4 indicate that the respondents agreed that using the mobile banking site improves the performance of respondents banking activities as shown by a mean of 1.5745, using the mobile banking makes it easier for the respondents to do banking activities as shown by a mean of 2.0638, the respondents found mobile banking useful for banking activities as shown by a mean of 2.0213, the respondents interaction with mobile banking was clear and understandable as shown by a mean of 2.0638 and the respondents agreed that they found mobile banking flexible to interact with as shown by a mean of 2.0000. However some respondents were neutral in that they did not agree or disagree as to whether or not using the mobile banking them to accomplish banking activities more quickly. This indicates that mobile banking in Kenyan commercial banks is useful to customers in making it easier and useful for them to do banking activities clear and understandable and flexible to interact with. These findings agree with studies by Chung and Kwon (2009) demonstrated that the constructs of perceived usefulness and perceived ease of use were positively related to behavioral intention to adopt mobile banking. Similarly, Lee et al. (2008) reported that perceived usefulness significantly affects consumers' intention to use mobile banking.

4.3.2 Social Norms

The study sought to find out the social norms influencing the adoption of mobile phone banking from the respondents. The findings are shown in table 4.5.

Table 4.5: Social Norms

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
my colleagues think that I should use mobile banking	30	11	4	2		1.5319	.83017
my decision to adopt internet banking is influenced by friends	8	33	5	1		1.9787	.60754
my decision to adopt internet banking is influenced by media	12	20	14	1		2.7021	4.57743
my decision to adopt internet banking is influenced by family	13	25	5	4		2.0000	.85973

The results in table 4.5 indicate that the respondents agreed that colleagues thought that the respondents should use mobile banking as shown by a mean of 1.5319, the respondents decision to adopt mobile banking was influenced by friends as shown by a mean of 1.9787, the respondents decision to adopt mobile banking was influenced by family as shown by a mean of 2.0000 while they were neutral in that their decision to adopt mobile banking was influenced by the media as shown by a mean of 2.7021.

This indicates that the respondent's colleagues, friends and family influenced the respondents to adopt and use mobile banking while the influence of the media on the adoption of mobile banking is not clear. These findings agree with Riquelme and Rios (2010), Puschel and Mazzon (2010) and Schepers and Wetzels (2007) who found out that social norms such as the opinions and influence of friends, family, and relatives are

important in making a decision to adopt a new product and service and is therefore one of the most vital determinants that manifest the user to adopt mobile banking.

4.3.3 Relative Advantages

The study sought to find out the relative advantages derived by the respondents from mobile banking. The results are shown in table 4.6.

Table 4.6: Relative Advantages

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
mobile banking has a range of services offered	21	16	8	1	1	1.8298	.93992
mobile banking is a convenient way of doing bank transactions	11	29	6	1		1.9362	.67258
mobile banking save time	18	17	11	1		1.8936	.84014
mobile banking is a convenient way to access the banking service	11	28	6	2		1.9787	.73690
mobile banking has a good connection speed	21	16	8	2		1.8085	.87572

The results in table 4.6 indicate that the respondents agreed that mobile banking has a good connection speed as shown by a mean of 1.8085, mobile banking has a range of services offered as shown by a mean of 1.8298, mobile banking save time as shown by a mean of 1.8936, mobile banking is a convenient way of doing bank transactions as shown by a mean of 1.9362, mobile banking is a convenient way of doing bank transactions as shown by a mean of 1.9362 and mobile banking is a convenient way to access the banking service as shown by a mean of 1.9787.

This indicates that mobile banking has a range of services, is convenient in doing bank transactions and access to the bank service, saves time and has a good connection speed. These findings agree with Mattila (2002) that perceived advantages benefits can be viewed in terms of greater convenience, user friendliness, shorter waiting time, and faster response. Meanwhile, in the study by Moore and Bensasat (2001) revealed that perceived relative advantage on technological innovation has positive impact to increase the adoption rates.

4.3.4 Perceived Risk

The study sought to find out the perceived risk by the respondents on mobile banking. The results are shown in table 4.7.

Table 4.7: Perceived Risk

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
I expect mobile banking transactions will be processed in accordance with their expectations	18	18	9	2		1.8936	.86562
I expect not to lose my privacy when doing mobile banking	15	25	6	1		1.8511	.72167
I expect not to lose any amount of money during mobile banking transaction	14	24	9			1.8936	.69888
mobile banking is secure	14	20	13			1.9787	.76583

The results in table 4.7 indicate that the respondents agreed that they expect not to lose any amount of money during mobile banking transaction as shown by a mean of 1.8936, they expect not to lose my privacy when doing mobile banking as shown by a mean of 1.8511, they expect mobile banking transactions to be processed in accordance with their expectations as shown by a mean of 1.8936 and they indicated that mobile banking is secure as shown by a mean of 1.9787.

This indicates that banks customers expect mobile banking to proceed with their expectations and to be secure. The customers also expect not to lose nay privacy and any amount of money when doing mobile banking transactions. These findings agree with Luo et al. (2010) who found out that user's perception of risk is a crucial driver to determine innovative technology acceptance and perceived risk discourages user to adopt new technology. Luo et al. (2010) further found out that perceived risk has negative significant relationship towards behavioral intention on mobile banking adoption.

4.3.5 Personal Innovativeness

The study sought to find out the contribution that a respondent's personal innovativeness contributed towards the adoption of mobile banking. The results are shown in table 4.8.

Table 4.8: Personal Innovativeness

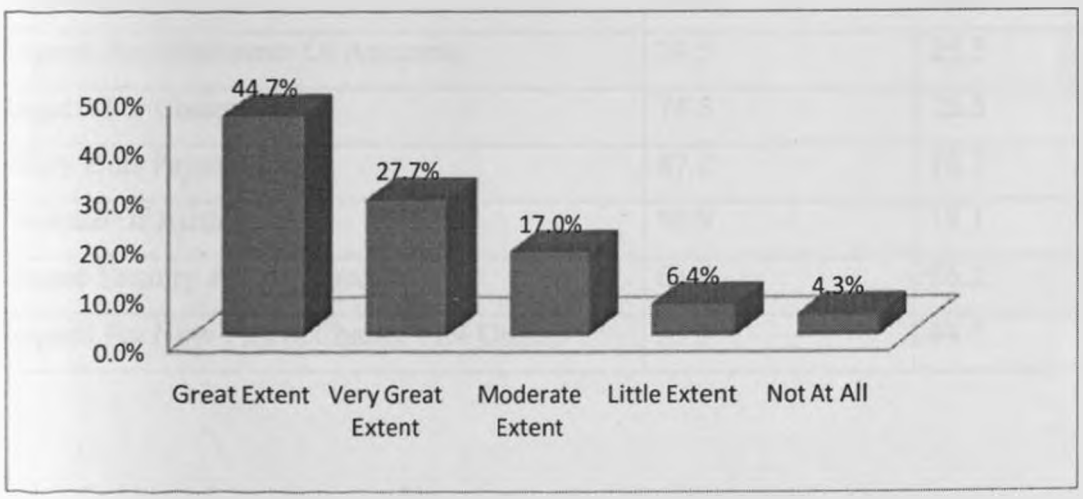
	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
I am willing to adopt technology	18	21	7	1		1.8085	.77005
I am aware of the mobile banking service	18	21	5	1	2	1.8936	.98321

The results in table 4.8 indicate that the respondents agreed that they were willing to adopt technology and were aware of mobile banking services as shown by a mean of 1.8085 and 1.8936 respectively. This indicates that the respondents were willing technology and were aware of mobile banking services. These findings agree with prior research that shows that personal innovativeness has strong influence in determining technology acceptance (Lockett, and Littler, 1997) further more innovative users tend to accept new technology more positively (Rogers, 2003). Agarwal and Prasad (1998) also found that innovative individuals will have higher tendencies in developing positive beliefs on new technology especially when the beliefs are developed through amalgamating of information from various media. Meanwhile, Joseph and Vyas (1984) asserted that innovative users perceived lower risk and much open-minded.

4.3.6 Extent of Use

The study sought to find out the extent that the respondent's bank had adopted mobile phone banking

Figure 4.4: Extent of Use



The results in figure 4.4 indicate that 44.7% of the respondent's banks had adopted mobile banking to a great extent, 27.7% to a very great extent, 17% to a moderate extent, 6.4% to a little extent and 4.3% to no extent at all.

This indicates that most commercial banks in Kenya have adopted mobile banking to a great extent and provide mobile banking services.

4.3.6.1 Services that Respondents Use

The study sought to find out the services that the respondents used. The findings are shown in table 4.9.

Table 4.9: Services that Respondents Use in Mobile Banking

Service	Yes (Percent)	No (Percent)
Balance Enquiry	91.5	8.5
View Mini-Statements	78.7	21.3
Pay Third Party Beneficiaries/ Inter-Account Transfers	66.0	34.0
Debit Orders	72.3	27.6
Currency Conversion	80.9	19.1
Brokerage	74.5	25.5
Request For Statements Of Accounts	74.5	25.5
Request For Chequebook	74.5	25.5
Utility Bills Payment	87.2	12.7
Purchase Of Airtime	80.9	19.1
Cheque Enquiry & Stop Cheque	63.8	36.2
Request For New PIN & Change PIN Online	55.3	44.7

The results in table 4.9 indicate that the respondents agreed that they used mobile banking for balance enquiry (91.5%), utility bills payment (87.2%), purchase of airtime (80.9%), currency conversion (80.9%), brokerage (74.5%), requests for statement of accounts (74.5%), view mini-statements (78.7%), request for chequebook (74.5%) to greater degree and pay third party beneficiaries/ inter-account transfers (66.0%), cheque enquiry & stop cheque (63.8%) and request for new pin & change pin online (55.3%) to a lesser degree.

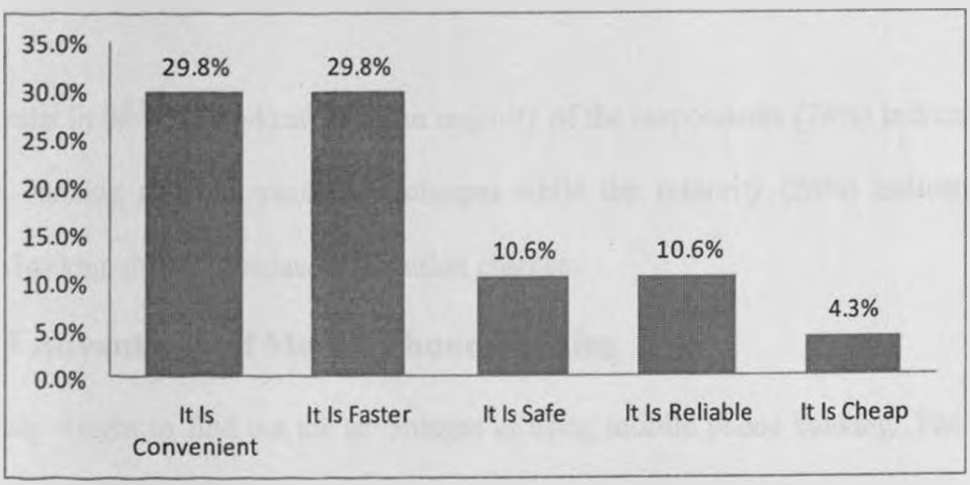
4.3.7 Benefits

The study also sought to find out the benefits the respondents derived from using mobile banking. The results are shown in the following sections.

4.3.7.1 Reasons for Using Mobile Phone Banking

The study sought to find out the respondents reasons for using mobile banking. The results are shown in figure 4.5 below.

Figure 4.5: Reasons for Using Mobile Phone Banking

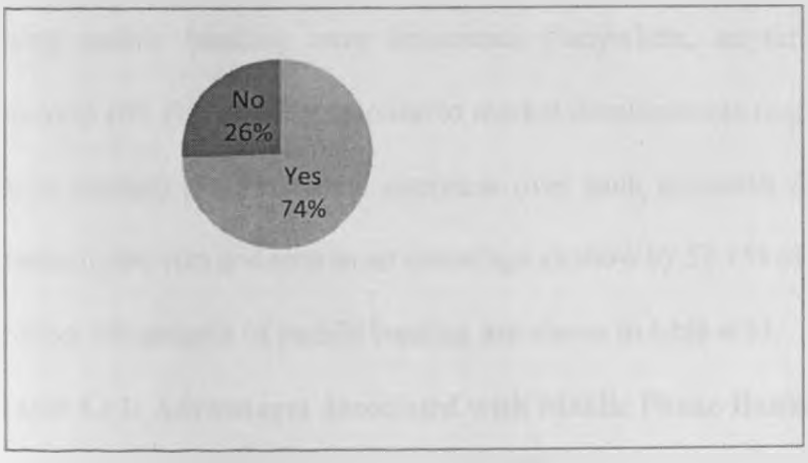


The results in figure 4.5 indicate that the respondents use mobile banking because it is convenient (29.8%), because it is faster (29.8%), it is safe (10.6%), it is reliable (10.6%) and because it is cheap (4.3%).

4.3.7.2 Reduction of Transaction Charges

The study sought to find out whether mobile banking reduces transaction charges. The findings are shown in figure 4.6.

Figure 4.6: Reduction of Transaction Charges



The results in table 4.6 indicate that the majority of the respondents (74%) indicated that mobile banking reduces transaction charges while the minority (26%) indicated that mobile banking does not reduce transaction charges.

4.2.7.3 Advantages of Mobile Phone Banking

The study sought to find out the advantages of using mobile phone banking. The results are shown in table 4.10.

Table 4.10: Advantages of Mobile Phone Banking

Advantage	Yes (Percent)	No (Percent)
ubiquitous ("anywhere, anytime") conducting of bank business	68.1	31.9
fast reaction to market developments (e.g. in case of turbulences in stock market)	74.5	25.5
overview over bank account/s (e.g. sms alerts for large transactions)	48.9	51.1
None	29.8	70.2

The results in table 4.10 indicate that the respondents indicated that the advantages for using mobile banking were ubiquitous ("anywhere, anytime") conducting of bank business (68.1%) and fast reaction to market developments (e.g. in case of turbulences in stock market) (74.5%) while overview over bank account/s (e.g. SMS alerts for large transactions) was not seen as an advantage as show by 51.1% of the respondents.

Further advantages of mobile banking are shown in table 4.11.

Table 4.11: Advantages Associated with Mobile Phone Banking

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
mobile banking is more secure than traditional banking	22	16	8	1		1.7447	.82008
Mobile Banking Is Safe	12	25	8	2		2.0000	.78019
Is It Easy To Learn To Use The Mobile Banking	15	22	9	1		1.9149	.77543
Mobile Banking System Is User Friendly	14	22	7	4		2.0213	.89660
Mobile Banking Provides Easy Access To My Bank Account Information	25	18	3	1		1.5745	.71459

The results in table 4.11 indicate that the respondents agreed that mobile banking provides easy access bank account information as shown by a mean of 1.5745, mobile banking is more secure than traditional banking as shown by a mean of 1.7447, it is easy to learn to use the mobile banking as shown by a mean of 1.9149, mobile banking is safe as shown by a mean of 2.0000 and mobile banking system is user friendly as shown by a mean of 2.0213.

4.3.8 Challenges

The study sought to find out the challenges facing the adoption of mobile banking. The results are shown in table 4.12.

Table 4.12: Challenges

Challenges	Yes (Percent)	No (Percent)
I Cannot Transact When Mobile Phone Network Is	72.3	27.7
Sometimes Transactions Are Not Online	70.2	29.8
Some Services Are Not Available On Mobile Banking Platform	68.1	31.9
My Phone Software Cannot Access Some Utilities Of Mobile Banking	53.2	46.8
Most Institutions Traditional Banking Receipts For Proof Of Payment	40.4	59.6

The results in table 4.12 indicate that the respondents agreed that they cannot transact when the mobile phone network is down (72.3%), sometimes transactions are not online (70.2%), some services are not available on mobile banking platform (68.1%) and phone

software cannot access some utilities of mobile banking (53.2%) as some of the challenges facing the adoption of mobile banking.

4.3.8.1 Reasons for Not using Mobile Phone Banking

The study sought to find out the reasons the respondents might not be using mobile phone banking. The results are shown in figure 4.13.

Table 4.13: Reasons for Not using Mobile Phone Banking

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
I Perceive Risk In Mobile Banking	32	11	3	1		1.4255	.71459
Information Concerning My Cell Phone Banking Transactions Can	15	28	3	1		2.1702	3.00954
My Bank Does Not Accept Liability In Case Of Loss	16	23	7	1		1.8511	.75119
The Technology Of Mobile Banking Is Not Easy To Understand	19	22	4	2		1.9149	1.52984

The results in figure 4.13 indicate that the respondents strongly agreed that they might not use mobile banking because they risk in mobile banking as shown by a mean of 1.4255, agreed that their banks do not accept liability in case of loss as shown by a mean of 1.8511, the technology of mobile banking is not easy to understand as shown by a mean of 1.9149 and information concerning my cell phone banking transactions can be tampered with by others as shown by a mean of 2.1702.

Table 4.14: Factor Analysis and Scale Reliabilities – Independent Variables

Variables	Original Item	Deleted Item	Actual Item	Factor Loading	Reliability
PU	5	1	4	0.713-0.762	0.708
PEOU	5	1	4	0.764-0.846	0.810
PI	4	1	3	0.775-0.893	0.779
RA	4	-	4	0.780-0.850	0.839
PR	4	-	4	0.793-0.878	0.866

Note: PU = Perceived Usefulness; PEOU = Perceived Ease of Use; SN = Subjective Norm; PI = Personal Innovativeness;

RA = Relative Advantage; PR = Perceived Risk

Table 4.15: Factor Analysis and Scale Reliabilities – Dependent Variable

Variable	Original Item	Deleted Item	Actual Item	Factor Loading	Reliability
BI	3	-	3	00.845-0.912	0.860

Note: BI = Intention to Use Mobile Banking

4.4 Correlation Analysis

The purpose of Pearson correlation analysis is to examine the bivariate relationships among variables. Table 4.16 presents correlation coefficients among dependent variable and independent variables. The highest correlation shown in the table 4.16 (Correlation Analysis) is 0.401. According to Field (2005), correlation coefficient should be below 0.8 to avoid multicollinearity. Hence, there is no multicollinearity problem in this study. The associated pairs of PEOU, RA, and PI are significant at level 0.01.

Table 4.17: Correlation Analysis

Variables	Perceived Usefulness	Perceived Ease of Use	Subjective Norms	Relative Advantage	Perceived Risk	Personal Innovativeness
Perceived Usefulness	-					
Perceived Ease of Use	0.347**					
Subjective Norms	0.006	0.095				
Relative Advantage	0.276**	-0.051	-0.092			
Perceived Risk	-0.008	0.167*	0.029	0.045		
Personal Innovativeness	0.286**	0.354**	0.401**	-0.100	0.195**	-

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

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

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of the findings from chapter four, and also it gives the conclusions and recommendations of the study based on the objectives of the study. The objective of this study was to establish the factors affecting the adoption of mobile banking by customers of Banks in Kenya.

5.2 Summary of the findings

The study found that most of the respondents were in one form of a relationship of another and were in some useful form of employment. The study also found out that the respondents used mobile banking because they found it cheap, safe and reliable to a greater extent. The study also found out that the respondent's colleagues, friends and family influenced the respondents to adopt and use mobile banking while the influence of the media on the adoption of mobile banking is not clear. The study also found out that mobile banking has a range of services, is convenient in doing bank transactions and access to the bank service, saves time and has a good connection speed. The banks customers expect mobile banking to proceed with their expectations and to be secure. The customers also expect not to lose nay privacy and any amount of money when doing mobile banking transactions. The respondents were also willing technology and were aware of mobile banking services.

On the commercial banks, the study found out that they knew technology and were aware of mobile banking services. The respondents also use mobile banking because it is

convenient and mobile banking reduces transaction charges. The study also found out the advantages for using mobile banking provides easy access bank account information, mobile banking is more secure than traditional banking, is it easy to learn to use the mobile banking mobile banking is safe and mobile banking system is user friendly. On the challenges to mobile banking the respondents indicated that they cannot transact when the mobile phone network is down, sometimes transactions are not online, some services are not available on mobile banking platform and phone software cannot access some utilities of mobile banking. On perceived risks the respondents indicated that they might not use mobile banking because they risk in mobile banking, agreed that their banks do not accept liability in case of loss, the technology of mobile banking is not easy to understand and information concerning my cell phone banking transactions can be tampered with by others.

5.3 Conclusions

Our findings revealed that PU has positive relationship in examining the intention to adopt mobile banking in Kenya. The findings were consistent with studies from Chung and Kwon (2009), Lee et al. (2008) and Luarn and Lin (2005). This result implies that if mobile banking is useful and beneficial, users are more likely to adopt mobile banking services. Therefore, banks should emphasize the benefits in the aspects of cost savings, ubiquity, flexibility, and mobility by using mobile banking services. Eventually, banks might educate users the benefits of using mobile banking services through promotional mix such as personal selling, advertisements, sales promotions, and public relations.

Similarly, PEOU was found to have positive relationship to adopt mobile banking. This is consistent with the prior studies such as Chung and Kwon (2008). Cohen (2008) argued that "bankers have to move beyond thinking of mobile banking as a subset of transactions from online banking that they can simply move to the mobile phone". In fact, banks should simplify the usage of mobile banking services and continue to design more user-friendly system interface. In addition, banks should provide adequate information and clearer guidance to encourage user to use the service.

Social norms were found to have insignificant relationship towards the intention to adopt the service. The results were contradicted with the findings from Puschel, and Mazzon (2010) Rogers (2003). One possible explanation to the results might due to the influences from social forces such as voluntariness. In the study of Lu et al. (2005) and Venkatesh and Davis (2000), they supported the phenomenon that SN will tend to have less effect if the use of service is on voluntary base. Subsequently, Bauer et al. (2005) also revealed the same finding that social norms have only slight influence on behavioral intention; interestingly, their study also found that personal attitude is a moderating factor for social norms to influence behavioral intention in adopting mobile banking.

Relative advantage was found to be significant in determining the intention to use mobile banking. The results were consistent with Pikkarainen et al. (2004) and Venkatesh and Davis (2001). Practically, users are more likely to adopt mobile banking if they believe using mobile banking will gain more relative advantages as compared to other traditional banking channels such as ATM or non-mobile internet banking. Hence, banks should emphasize the benefits that they can offer through this alternative banking channel.

Specifically, competitive matrix should be used by banks to highlight the benefits over other banking channels. Therefore, the more relative advantage perceived by users, the higher possibility consumer will be attracted to adopt mobile banking.

Even though several studies found that security issues are not the main inhibitor in mobile banking adoption Suoranta (2003), Laukkanen, and J. Lauronenour (2005), findings show that there is negative significant relationship between perceived risk and mobile banking adoption. This implies that individuals perceived higher risk and uncertainty incurred in adopting mobile banking. Significantly, these findings were found to be consistent with Luo et al. (2010) and Mitchell (1999) in which perceived risk is one of the critical factors to be focused while designing and developing a mobile banking service. Therefore, it is important for banks and service providers to project higher security when providing mobile banking services in order to yield higher consumers' acceptance. In fact, banks and service providers should continuously innovate and offer better security and reliable applications to enhance users' confidence towards mobile banking services.

Numerous studies found that PI has significant influence on the acceptance on IT Venkatesh, and Davis (2000), internet shopping Donthu, and Garcia (1999), web broadcasting Lin (2005). In this study, our findings revealed that PI has positive significant relationship towards the intention to adopt mobile banking services. The results were consistent with Lee et al. (2008)'s studies. This simply means that those users with high innovativeness are more likely to explore and adopt mobile banking services. Generally, high innovative individuals are usually the trendsetters along with

high social economic status Mason et al (2003), hence, banks should formulate the marketing strategy (i.e. buzz marketing) to attract 'innovators' and 'early adopters'. Even though both categories only representing small segment of target market, they play an important role to influence others such as 'early majority' to adopt mobile banking services.

5.4 Limitations

A limitation for the purpose of this research was regarded as a factor that was present and contributed to the researcher getting either inadequate information or responses or if otherwise the response given would have been totally different from what the researcher expected.

The main limitation of this study was that some respondents refused to fill in the questionnaires. This reduced the probability of reaching a more conclusive study. However, conclusions were made with this response rate. The small size of the sample could also have limited confidence in the results and this might limit generalizations to other situations.

5.5 Recommendations

With the massive investment and efforts contributed in developing the mobile banking facilities, the varieties of convenient functions invented by mobile technology has greatly encouraged mobile users to engage in mobile banking services. After reviewing the findings of this study, there are several important implications suggested for banks, service developers and software engineers in order to provide better strategic insight to design and implement mobile banking services that yield higher consumer acceptance in

Kenya. As PU, PEOU, RA and PR were found to be the factors that influence consumers' behavior intention in adopting mobile banking, service developers and software engineers should focus on the development of mobile banking facilities.

This can be achieved by developing better functions in terms of flexibility, security and accessibility features to enhance consumers' confidence to adopt mobile banking services. Since the perceived risk greatly influence consumers' behavioral intention, thus security is one of the important factors to stimulate customers' confidence level to adopt mobile banking services. The mobile banking service providers should enhance the security features consistently by practicing transparency management during the process of monetary transactions. In this sense, it is important to build trustworthy business reputation in a long term perspective. Lastly, in the views of personal innovativeness demonstrates a positive-significant relationship towards mobile banking adoption; thus the banks can promote and create awareness to the public through highlighting the benefits or advantages that can be gained from the mobile banking services to stimulate the adoption level among the mobile users. Instead, such promotion also provides better exposure and awareness to the non-mobile banking users to have positive impression towards mobile banking services and utilize the application in future.

REFERENCES

Agarwal, R., & Prasad, J. (1997). "The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technologies," *Decision Sciences* (28:3), pp. 557-582.

Agarwal R., & J. Prasad, (1998) A Conceptual and Operational definition of Personal Innovativeness in the domain of information technology, *Information Systems Research*, vol. 9, no. 2, pp. 204-215,

Ajzen, I. (1991). "The Theory of Planned Behavior," *Organizational Behavior and Human Decision Processes* (50:2), pp. 179-211.

Anckar. B., & D. D'Incau, (2002) Value creation in mobile commerce: Findings from a consumer survey, *Journal of Information Technology Theory and Application*, vol. 4, pp. 43-64,

Au, Y. A., and Kauffman, R. J. (2008) The economics of mobile payments: understanding stakeholder issues for an emerging financial technology application. *Electronic Commerce Research and Applications*, 7, 141–164.

Bandura, A. (1986) *Social Foundations of Thought and Action: A Social Cognitive Theory*, Prentice Hall, Englewood Cliffs, NJ.

Barnes, S. J., & Corbitt, B. (2003). Mobile banking: concept and potential. *International Journal of Mobile Communications*, 1(3), 273-288

Beck, T., Demirguc-Kunt, A., & Peria, M. S. M. (2007). Reaching out: Access to and use of banking services across countries. *Journal of Financial Economics*, 85, 234-266

Black E, Breed J, Breeze AL, Embrey K, Garcia R, et al. (2005) *Management of Mobile banking.* Chem Lett

Bryman, A. and Bell, E. (2003). Business research methods. New York: Oxford University Press.

Chaia, A., Dalal, A., Goland, T., Gonzalez, M., Morduch, J., & Schiff, R. (2009). Half the world is unbanked. Financial Access Initiative. Available at: http://financialaccess. org/research/publications

Chan S. C., & M. T. Lu, (2004) Understanding internet banking adoption and use behavior: A Hong Kong perspective, *Journal of Global Information Management*, vol. 12, no. 3, pp. 21-43,

Chung N., & S. J. Kwon, (2009) The effects of customers' mobile experience and technical support on the intention to use mobile banking, *Cyber Psychology and Behavior*, vol. 12, no. 5, pp. 539-543,

Citrin A. V. , D. E. Sprott, S. N. Silverman, & D. E. Stem Jr, (2000). Adoption of internet shopping: The role of consumer innovativeness, *Industrial Management and Data System* vol. 100, no. 7, pp. 294-300,

Compeau, D. R., & Higgins, C. A. (1995a) "Application of Social Cognitive Theory to Training for Computer Skills," *Information Systems Research* (6:2), pp. 118-143.

Compeau, D. R., & Higgins, C. A. (1995b) "Computer Self-Efficacy: Development of a Measure and Initial Test," *MIS Quarterly* (19:2), pp. 189-211.

Compeau, D. R., Higgins, C. A., & Huff, S. (1999) "Social Cognitive Theory and Individual Reactions to Computing Technology: A Longitudinal Study," *MIS Quarterly* (23:2), pp. 145-158.

Crabbe, M., C. Standing, et al. (2009). "An adoption model for mobile banking in Ghana." *International Journal of Mobile Communications* 7(5): 515-543.

Cruz P., L. B. F. Neto, P. Munoz-Gallego, & T. Laukkanen, (2010) Mobile banking rollout in emerging markets: Evidence from Brazil, *International Journal of Bank Marketing, vol.* 28, no. 5, pp. 342-371,

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), pp. 982-1002.

Davis. F. D., (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology, *MIS Quarterly, vol.* 13, no. 3, pp. 319-340,

Dholakia, R.R., & Dholakia, N. (2002). Mobility and markets: emerging outlines of m-commerce. *Journal of Business Research,* 57, 1391-1396.

Donner J., & C. A. Tellez, (2008) Mobile banking and economic development: Linking adoption impact and use, *Asian Journal of Communication*, vol. 18, no. 4, pp. 318-332,

Fain, D., & Roberts, M.L. (1997). Technology vs. Consumer behaviour: the battle for the financial services customer. *Journal of Direct Marketing,* 11, 1, 44-54.

Fishbein, M., & Ajzen, I. (1999) Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research, Addison-Wesley, Reading, MA, 1975. Motivation," *MIS Quarterly* (23:2), pp. 239-260.

Georgi, F. and J.Pinkl; (2008) "Mobile Banking in Deutschland – Der zweite Anlauf", *in Die Bank, Berlin, Issue* 3/x, p. 57-61.

Gerrard P., & J. Cunningham, (2003) The diffusion of internet banking among Singapore consumers, *International Journal of Bank Marketing*, vol. 21, no. 1, pp. 16-28,

Hsu C. L., & H. P. Lu, (2004) Why do people play on-line games? An extended TAM with social influences and flow experience, *Information and Management*, vol. 41, no. 7, pp. 853-868,

Hung S. Y., C. Y. Ku, & C. M. Chang, (2003) Critical factors of WAP services adoption: An empirical study, *Electronic Commerce Research and Applications*, vol. 2, no. 1, pp. 42-60,.

infoDEV. (2006). Micro-payment systems and their application to mobile networks. http://infodev.org/files/3014_file_infoDev.Report_m_Commerce_January.2006.pdf

Ivatury, G. (2004). Harnessing technology to transform financial services for the poor. *Small Enterprise Development, 15*(4), 25-30.

Ivatury, G., & Mas, I. (2008). *The early experience with branchless banking.* Washington, DC: CGAP.

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.

Joseph. B., & S. J. Vyas, (1984) Concurrent validity of a measure of innovative cognitive style, *Journal of the Academy of Mareting Science*, vol. 12, no. 1, pp. 159-175,

Karahana. E., & M. Limayem, (2000) E-mail and v-mail usage: Generalizing across technologies, *Journal of Organizational Computing and Electronic Commerce*, vol. 10, no. 1, pp. 49-66,

Karahanna, E., & Straub, D. W. (1999) "The Psychological Origins of Perceived Usefulness and Ease of Use," *Information and Management* (35:4), pp. 237-250.

Karahanna, E., Straub, D. W., & Chervany, N. L. (1999) "Information Technology Adoption across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs," *MIS Quarterly* (23:2), pp. 183-213.

Karjaluoto, H. (2002). Selection criteria for a mode of bill payment: Empirical investigation among Finnish bank customers. *International Journal of Retail and Distribution Management, 30*(6), 331-339.

Kelman, H. C. (1958) "Compliance, Identification, and Internalization: Three processes of Attitude Change," *Journal of Conflict Resolution* (2), pp. 51-60.

Kleijnen M., K. Ruyter, & M. Wetzels, (2007) An assessment of value creation in mobile service delivery and the moderating role of time consciousness, *Journal of Retailing*, vol. 83, no. 1, pp. 33-46,

Kleijnen M., M. Wetzels, & K. de Ruyter, (2004) Consumer acceptance of wireless finance, *Journal of Financial Services Marketing*, vol. 8, no. 3, pp. 206-217,

Laforet S., & X. Li, (2005) Consumers' attitudes towards online and mobile banking in China, *International Journal of Bank Marketing*, vol. 23, no. 5, pp. 362-380,

Laukkanen T., (2007) Internet vs. mobile banking comparing customer value perceptions, *Business Process Management Journal*, vol. 13, no. 6, pp. 788-797,

Laukkanen, T., & Pasanen, M. (2007). Mobile banking innovators and early adopters: How they differ from other online users? *Journal of Financial Services Marketing*, 13(2), 86-94.

Lee Y. K., J. H. Park, & N. Chung, (2008) An exploratory study of factors affecting usage intention toward mobile banking: A unified perspective using structural equation modeling, Society for Marketing Advances Proceedings,

Lee Y., & I. Benbasat, (2003) Interface design for mobile commerce, *Communications of the ACM*, vol. 46. pp. 49- 52,

Lee Y., K. A. Kozar, & K. R. T. Larsen, (2003) The technology acceptance model: Past, present, and future, *Communications of the Association for Information Systems,* vol. 12, pp. 752-780,

Lockett, A. & Litter, D. (1997). "The Adoption of Direct Banking Services." *Journal of Marketing Management,* 13, No. 8, November, 791-881.

Looney. C. A., L. M. Jessup, & J. S. Valacich, (2004) Emerging business models for mobile brokerage services, *Communications of the ACM*, vol. 46, pp. 71-77,

Lu J., J. E. Yao, & C. S. Yu, (2005) Personal innovativeness, social influences and adoption of wireless internet services via mobile technology, *Journal of Strategic Information Systems*, vol. 14, pp. 245-268,

Luarn P., & H. H. Lin, (2005) Toward an understanding of the behavioral intention to use mobile banking, *Computers in Human Behaviour*, vol. 21, no. 6, pp. 873-891,

Luo X., H. Li, J. Zhang, & J. P. Shim, (2010) Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services, *Decision Support Systems*, vol. 49, no. 2, pp. 222-234,

Mallat, N. (2007). "Exploring consumer adoption of mobile payments – A qualitative study " *The Journal of Strategic Information Systems* 16(4): 412-432.

Mathieson K., (1991) Predicting user intentions: Comparing the technology acceptance model with the theory of planned behaviour, *Information System Research, vol.* 84, no. 1, pp. 123-136,.

Mattila M., 2003) Factors affecting the adoption of mobile banking services, *Journal of Internet Banking and*, vol. 8, no. 1, pp. 14-15,

Meuter M., M. Bitner, A. Ostron, & S. Brown, (2005) Choosing among alternative service delivery modes: An investigation of customer trial of self-service technologies, *Journal of Marketing,* vol. 69, no. 2, pp. 61-83,

Mick. G. D., & S. Fournier, (1998) Paradoxes of technology: Consumer cognizances emotions and coping strategies, *Journal of Consumer Research*, vol. 25, pp. 123-142,

Mitchell V. W., (1999) Consumer perceived risk: Conceptualizations and models, European *Journal of Marketing,* vol. 33, nos. 1/2, pp. 163-195,

Moore. G. C., & I. Benbasat, (1991) Development of an instrument to measure the perceptions of adopting an information technology innovation, *Information Systems Research*, vol. 2, no. 3, pp. 173-191,

Mortimer-Schutts, I. (2007). The regulatory implications of mobile and financial services convergence. In D. Coyle (Ed.), *The transformational potential of m-transactions* (Vol. 6, pp. 19-29). London: Vodafone Group.

Pedersen P., & R. Ling, (2002) Modifying adoption research for mobile internet service adoption: Cross-disciplinary interactions, Proceedings of the 36th Hawaii International Conference on System Sciences, Big Island, HI, January 6-9,

Pikkarainen, T., Pikkarainen, K., Karjaluoto, H. and Pahnila, S., (2004), "Consumer acceptance of online banking: an extension of the technology acceptance model", *Internet Research, Vol.* 14 No. 3, pp. 224–235.

Plouffe, C. R., Hulland, J. S., & Vandenbosch, M. (2001) "Research Report: Richness Versus Parsimony in Modeling Technology Adoption Decisions - Understanding Merchant Adoption of a Smart Card-Based Payment System," *Information Systems Research* (12:2), pp. 208-222.

Porteous, D. (2007). Just how transformational is m-banking? http://www.finmarktrust.org.za/accessfrontier/Documents/transformational_mbanking.pdf

Puschel J., & J. A. Mazzon, (2010) Mobile banking: Proposition of an integrated adoption intention framework, *International Journal of Bank Marketing*, vol. 28, no. 5, pp. 389-409,

Ram, S., (1987). A model of innovation resistance. Advances in Consumer Research 14, 208– 212.

Ram, S., Sheth, J.N., (1989). Consumer resistance to innovations: the marketing problem and its solutions. *Journal of Consumer Marketing* 6 (2), 5–14.

Riquelme. H. E., & R. E. Rios, (2010) The moderating effect of gender in the adoption of mobile banking, *The International Journal of Bank Marketing*, vol. 28, no. 5, pp. 328-341

Mallon, R. (2000). "Competence: What's In? What's Out? Who Knows?" Commentary on Joshua Knobe's "Person as Scientist, Person as Moralist." *Behavioral and Brain Sciences.*

Schepers J., & M. Wetzels, (2007) Ameta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects, *Information and Management*, vol. 44, no. 1, pp. 90-103,

Sun Microsystems (2008a) Java Card Technology. [cited 2008 September 29]; Available from: ttp://java.sun.com/javacard/.

Taylor S., & P. Todd, (1995) Assesing IT usage: The role of prior experience, *MIS Quarterly*, vol. 19, no. 4, pp. 561-570,

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991) "Personal Computing: Toward a Conceptual Model of Utilization," *MIS Quarterly* (15:1), pp. 125-143.

Tiwari R, Buse S and Herstatt C, (2006) Customer on the Move: Strategic Implications of Mobile Banking for Banks and Financial Enterprises, in CEC/EEE 2006,Proceedings of The 8th IEEE International Conference on E-Commerce Technology and The 3rd IEEE International Conference on Enterprise Computing, E-Commerce, and E-Services,522-529, San Francisco.

Triandis, H. C. (1977) *Interpersonal Behavior*, Brooke/ Cole, Monterey, CA,.

Vaughan, Pauline. (2007). "Early lessons from the deployment of M-PESA, Vodaphones's own mobile transactions service" In The Transformational Potential of M-transactions, Vodaphone Policy Paper Series, No.6. Online http://www.vodaphone.com/m-transactions

Venkatesh, V. (2000)"Determinants of Perceived Ease of Use: Integrating Perceived Behavioral Control, Computer Anxiety and Enjoyment into the Technology Acceptance Model," *Information Systems Research* (11:4), , pp. 342-365.

Venkatesh, V., & Davis, F. D. (2000)"A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies." *Management Science* (46:2), 2000, pp. 186-204.

Walker R. H., M. Craig-Lees, R. Hecker, & H. Francis, (2002) Technology-enabled service delivery: An investigation of reasons affecting customer adoption and rejection, International *Journal of Service Industry Management*, vol. 13, no. 1, pp. 91-106,

Wang, Y. S., Lin, H. H., & Luam, P. (2006). Predicting consumer intention to use mobile services. *Information Systems Journal,* 16, 2, 157 – 179.

Wang, Y.S., Wang, Y.M., Lin, H.H., & Tang, T.I. (2003). Determinants of user acceptance of Internet banking: An empirical study. *International Journal of Service Industry Management,* 14, 5, 501-519.

Warshaw, P. R. (1980)"A New Model for Predicting Behavioral Intentions: An Alternative to Fishbein," *Journal of Marketing Research* (17:2), , pp. 153-172.

Wood S. L., & J. Swait, (2002) Psychological indicators of innovation adoption: Cross-classification base on need for cognition and need for change, *Journal of Consumer Psychology*, vol. 12, no. 1, pp. 1-13,

Yang K. C. C., (2005) Exploring factors affecting the adoption of mobile commerce in Singapore, *Telematics and Informatics*, vol. 22, no. 3, pp. 257-277,.

Yi M., J. D. Jackson, J. S. Park, & J. C. Probst, (2006) Understanding information technology acceptance by individual professionals: Towards an integrative view, *Information and Management,* vol. 43, pp. 350-363,

APPENDICES

Appendix I: Questionnaire

Section A: Demographic Factors:

1. Gender Male:☐ Female:☐
2. Age: Under 18:☐ 18-24 years:☐ 25-34 years:☐ 35-49 years:☐

   50-64 years:☐ 65 years and over:☐
3. Marital status

   Married:☐ Widow:☐ Single:☐ Cohabitation: ☐ Divorced: ☐
4. Occupation

   Executive:☐ Farmer:☐ Worker:☐ Pensioner:☐

   Not at work:☐ Entrepreneur:☐ White-collar worker:☐ Public servant:☐

   Student:☐ Other:☐
5. Which are the reasons of making use of mobile banking? Please tick appropriately

   It is cheap: ☐ It is reliable:☐ It is safe:☐ It is convenient:☐

Section B

Factors for adoption

6. Perceived Usefulness

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Using the mobile banking site improves my performance of banking activities					
Using the mobile banking makes it easier to do my banking activities					
Using the mobile banking enables me to accomplish banking activities more quickly					
I find mobile banking useful for my banking activities					
My interaction with the mobile banking is clear and understandable					
I find mobile banking flexible to interact with					

7. Social Norms

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
My colleagues think that I should use mobile banking					
My decision to adopt Internet banking is influenced by Friends					
My decision to adopt Internet banking is influenced by Media					
My decision to adopt Internet banking is influenced by Family					

8. Relative advantages

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Mobile banking has a range of services offered					
Mobile banking is a Convenient way of doing bank transactions					
Mobile banking save time					
Mobile banking is a Convenient way to access the banking service					
Mobile banking has a good Connection speed					

9. Perceived Risk

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I expect Mobile banking transactions will be processed in accordance with their expectations					
I expect not to lose my privacy when doing mobile banking					
I expect not to lose any amount of money during mobile banking transaction					
Mobile banking is secure					

10. Personal Innovativeness

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I am willing to adopt technology					
I am aware of the mobile banking service					

Section C – Extend of Use

1. To what extent has your bank embraced mobile banking?

Not at all[ ] Little extent[ ] Moderate extent[ ] Great extent[ ] Very great extent[ ]

2. Which services do you use in your mobile banking? (Please mark all that apply)

Balance enquiry	
View mini-statements	
Pay third party beneficiaries/ Inter-account transfers	
Debit orders	
Currency conversion	
Brokerage	
Request for statements of accounts	
Request for chequebook	
Utility bills payment	
Purchase of airtime	
Cheque enquiry & stop cheque	
Request for new PIN & change PIN online	

Section D – Benefits

Which are the reasons of making use of mobile banking? Please tick appropriately.

It is cheap [ ] It is reliable [ ] It is safe [ ] It is faster [ ] It is convenient [ ]

Does mobile banking reduce transaction charges? Yes [ ] No [ ]

What in your opinion are the advantages of mobile banking?

[ ] Ubiquitous ("anywhere, anytime") conducting of bank business

[ ] Fast reaction to market developments (e.g. in case of turbulences in stock market)

[ ] Overview over bank account/s (e.g. SMS alerts for large transactions)

[ ] None

[ ] Others (please specify) .....

.....

Please tick appropriately;

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Mobile banking is more secure than traditional banking					
Mobile banking is safe					
Is it easy to learn to use the mobile banking					
Mobile banking system is user friendly					
Mobile banking provides easy access to my bank account information					

Section E – Challenges

Which are the challenges of using mobile banking? Please tick appropriately.

[ ] I cannot transact when mobile phone network is down

[ ] Sometimes transactions are not online

[ ] Some services are not available on mobile banking platform

[ ] My phone software cannot access some utilities of mobile banking

[ ] Most institutions traditional banking receipts for proof of payment

[ ] Others (specify).....

Which are the reasons of not making use of mobile banking? Please tick appropriately.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I perceive risk in Mobile banking					
Information concerning my cell phone banking transactions can be tampered with by others					
My bank does not accept liability in case of loss					
The technology of mobile banking is not easy to understand					