Factors Influencing the Adoption of Mobile Banking in Kenya's Commercial Banks: A Case of Kenya Commercial Bank (KCB) Kilindini Branch

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Abstract- Across the developing world, there are more people with mobile phones than with bank accounts (Portteous, D. 2007). In 2007, there were over 3.3 billion phone users, and close to 60% of the subscribers lived in the developing world (UNCTAD, 2007-2008). Thus, many entities with a global development focus have turned to the mobile phone as a potential platform for delivering financial services to the "unbanked". It's against this background that the researcher saw the need to pursue this study. The uptake of mobile phones in Kenya has been unprecedented. Of vital significance is the rapid absorption of mobile based banking services. This trend of continued dependence on mobile devices to accomplish monetary transactions is steadily gaining thrust. The objective of this study was to assess the factors affecting the adoption of mobile banking at the KCB Kilindini Branch, Mombasa, Kenya. The specific objectives of the study were to: assess the component of perceived risk with regard to mobile banking adoption, explore how customers at the KCB Kilindini branch perceive the impact of cost to mobile banking adoption, and determine how perceived ease of use influenced the adoption of mobile banking at the KCB Kilindini Branch. The study adopted a descriptive research design. A sample size of 169 respondents was used in the study. Data from the target population was collected from account holders in KCB, Kilindini Branch. Respondents included business people, personal account holders and corporate customers. Interviews were conducted concurrently with observations. The collected data was then be cleaned, coded and analyzed using SPSS version 20.0 software. On the first specific objective of assessing the effect of perceived risk on adoption of mobile banking, the study found perceived risk to be one of the key factors impeding the adoption of mobile banking. The second specific objective sought to establish the effects of perceived impact of cost on adoption of mobile banking. The study concludes that cost was a key factor stopping people from adopting mobile banking. Lastly, on the influence of perceived ease of use of mobile banking on mobile banking adoption, the study concludes that perceived ease of use of mobile banking did not affect mobile banking adoption. The study recommends more studies on mobile banking adoption to be conducted in other areas of the country to find out if there could be any similarities.

Index Terms- Mobile Banking, Innovation, M- Pesa

I. INTRODUCTION

Entrepreneurship and innovation are of fundamental importance to our economy as they spur economic growth and wealth creation (Barringer and Ireland, 2008). There is wide agreement among economists that entrepreneurship is a crucial factor in the diffusion of new technologies (Science, 2001), international competitiveness and the creation of new jobs.

Innovation has become more globalized over the last decade and its importance as a driver of competitive advantage in economies has increasingly grown. It is a very critical element in entrepreneurship since it is the ticket to delivering better unique products and services, new and more efficient production processes, and improved business performance. Innovation involves the creation of new designs, concepts and ways of doing things, their commercial exploitation and subsequent diffusion through the rest of the economy and society (Wickham, 2006). The great expansion of information and communication technologies that has taken place during the last decade has set the stage for a new age of opportunities and challenges. The adoption of internet, mobile telephony and broadband networks in many developed countries has been found to have positive effect on firms' performance. They provide speedy, inexpensive and convenient means of communication. According to the World Bank (2006), firms that use ICT grow faster, invest more, and are more productive and profitable than those that do not.

Schumpeter in his theory of economic development constructed a theory in which the entrepreneur is the source of all dynamic change in the market. In 1934, Schumpeter, whose contribution to entrepreneurship development is globally recognized, emphasized the process of creative destruction, indicating how entrepreneurial innovations make current products and technologies obsolete and fuel economic activity for new products. Kizner (1973) who is also widely recognized for his contribution to entrepreneurship development, put emphasis on two main aspects: alertness to new opportunities and seizing an opportunity by taking further innovative actions. According to his theory, he suggests that alertness leads to the discovery of new opportunities and innovative actions.

Mobile banking is a service provided by financial institutions in cooperation with mobile operators. The essence is all about getting banking services to the unbanked, those who do not have bank access or bank accounts, and those who are at the bottom of the economic pyramid, often living in remote areas. They receive the benefits of banking services such as being able

to save and borrow in a cost-efficient and secure way. The services include viewing account balances, making transfers between accounts, or paying bills via a mobile device such as a mobile phone. In recent time Mobile banking is most often performed via SMS or the Mobile Internet but can also use special applications downloaded to the mobile device (Salzaman, Palen & Harper, 2001).

Across the developing world, there are more people with mobile phones than with bank accounts (Portteous D. 2007). In 2007, there were over 3.3 billion phone users, and close to 60% of the subscribers lived in the developing world (UNCTAD, 2007-2008). Thus, many entities with a global development focus have turned to the mobile phone as a potential platform for delivering financial services to the unbanked.

Current literature hypothesizes that mobile phones have the potential to become low cost accessible accounts or delivery channels for financial services, in particular electronic money and mobile banking (Boateng & Duncombe, 2009). The reason for this is that there exists an inherent need by the poor for low-cost financial services that could be delivered by the mobile phone (Boateng & Duncombe, 2009). Some examples of successful mobile banking implementations in developing countries can be seen in Pakistan with Easy Paisa and T-Cash in Haiti (Acharya & Kshetri, 2012). Mobile payments or branchless banking have become a key catalyst for financial inclusion and make use of agents to penetrate areas where the poor live and work (Dermish *et al.*, 2012).

Business practices in Kenya have gone through many changes as well, the most important being the introduction of Information Communication and Technology (ICT). The mobile phones have been a key ICT product that has affected business practices. This is manifest in various areas including advertisements, marketing, emergence of new products, and new methods of payments. The methods of payment through the use of mobile phones have been the most recent development in Kenya and have revolutionized how business is conducted among the small-scale business holders. Micro-businesses have embraced the use of mobile payment technology in their operations. They view this mode of payment as an easier form of cash delivery to their suppliers and business partners, a system which is relatively affordable, personal and can be used anywhere and at any time (Anurag, Tyagi and Raddi, 2009). There is appeal and utility of mobile

M-Pesa in Kenya has proven to be a resounding success with Safaricom having over 77% market share in the mobile network environment, and a 9.7 million M-Pesa user base (GSMA, 2012). It has a powerful brand presence and marketing has been geared to reflect national sentiment, as well as delivering a clear message aimed at the customer needs for financial services (Mas and Morawczynski, 2009; Dermish *et. al.,* 2012).

In the banking world, developments in information technology have had an enormous effect in development of more flexible payment methods and more user-friendly banking services (Akinci *et. al.,* 2004). The remarkable gains made towards mobile phone access have seen a steady progress in the scope of innovations emanating from exploitation of these fairly new technologies. What has characterized the Kenyan mobile landscape is a rapid uptake of various services key among them the mobile based products. Mobile banking is one innovation

which has progressively rendered itself in pervasive ways cutting across numerous sectors of economy. An appropriate banking environment is considered a key pillar as well as an enabler of economic growth (Koivu, 2002).

The remarkable gains made towards mobile phone access have seen a steady progress in the scope of innovations emanating from exploitation of these fairly new technologies. New innovations are challenging the idea that development requires handling ideas down from developed to developing countries. In banking and finance, the big ideas in cashless transfers and mobile flexible exchanges are not to be found in Geneva, London or New York. A revolution in mobile money transfer has occurred, but not in these financial centers. Instead, it happened in Kenya with M-pesa. The service was developed between Safaricom and Vodafone, and launched in 2007. This is not just something used in cities or big commercial interests. By 2010, over 50% of Kenyan's population had used it. This means rural villagers haggling over produce, and then using their phones to make the final deal (Olivia O'sullivan, 2012).

The latest survey by the Kenya Bankers Association (KBA) shows that six out of every ten Kenyans interviewed send and receive money through their mobile phones. Only three out of every ten Kenyans go to banking halls, while only eight per cent use the Automated Teller Machines. The study, which was conducted in collaboration with Think Business Ltd, shows that the lenders have increased the usage of mobile banking platforms in their banking transactions with 60 per cent of Kenyans now using mobile phones for financial or banking transactions (James Anyanzwa and Anjellah Owino 2014).

This project will be carried out as a research on Kenya Commercial Bank's (KCB's) Mobile banking service. KCB is a fully-fledged commercial Bank offering savings and lending services to individuals, entrepreneurs and companies of all sizes. It has the largest branch network in East Africa and enjoys dominance as the Bank with largest balance sheet and capital base, respectively, in the region. It is a publicly quoted company with its shares trading at the Nairobi Securities Exchange (NSE), Uganda Securities Exchange, Dar es Salaam Stock Exchange and Rwanda over the Counter (www.kcb.co.ke).

In 1997, KCB set up business in Tanzania before expanding further to Southern Sudan in 2006 and to Uganda in 2007. The youngest subsidiary, Rwanda began operations in 2008. The Bank has a network of 210 outlets and over 400 automated teller machines across East Africa that are strategically located to provide synergies across markets. During the reporting period a total number of 73 new branches were opened across the region, raising the number from 137 branches to the current 210 branches. 41 new outlets opened in Kenya, 11 in Uganda, 5 in Tanzania, 6 in Southern Sudan while KCB Rwanda which began operations in 2008 has 9 outlets. Most of the branches are located in rural administrative and business centers. KCB has over two billion authorized shares held among Kenyan, East African and foreign investors (www.kcb.co.ke)

The Bank also introduced a mobile telephone banking facility for its customers in 2009. The product commonly known as KCB Connect is a mobile telephone Bank that has changed the lives and financial lifestyle of mobile subscribers in Kenya estimated at 17million. The mobile Banking service provides full Banking services on the mobile telephone handset at the touch of

a button, including enquiries, Banking instructions, funds transfers and utility bill payments. A key differentiator between KCB Connect and other offerings in the market is the ability of all mobile telephone subscribers to open accounts on their phones that will enable them to transact with KCB. Working with one of Kenya's major mobile telecommunications service provider, the Bank has put in place the necessary infrastructure to enable customers to transfer funds from one KCB account to another, from KCB to the revolutionary and trendsetting M-pesa service and vice versa and from any KCB account to any phone account of the customer's choice (www.kcb.co.ke).

One can easily access his/her accounts through the mobile banking service by dialing *522# and following the prompts. KCB connect Services include checking KCB account balance, buying credit/airtime, Sending money to M-Pesa account, Transfer funds to other KCB accounts, Withdraw cash, Get mini statements, Service request i.e. Cheque book request, Foreign exchange rates, Full statement request, Stop cheque and paying bills (www.kcb.co.ke).

Statement of the problem

In the past, studies have addressed conceptual issues and conducted general consumer surveys (Pousttchi, 2003; Taga and Karlson, 2004). However, there is little research available in the literature on factors affecting the adoption of mobile banking in Kenya. People's level of experience with technology is higher than a decade ago. The future of Mobile banking looks encouraging and bright, if obstacles are overcome.

In October 2013, the KCB launched M-Benki, a mobile banking platform targeted at the unbanked population, which allows customers to open a bank account without physically visiting a branch. The bank (KCB) posted a 17 per cent rise in net profit for the year ended December 2013 helped by increased lending and lower loan losses provisions through mobile banking (Business daily, Thursday, June 12, 2014). Efforts in place to ensure uptake of mobile banking has really gone up, with the many advertisements which of course is a huge investment .The uptake and adoption of mobile banking has since not matched up with the level of investment vested in the program. Since the launch, customer numbers have increased to nearly three million out of estimated seventeen million account holders, the projection for year-end is five million customers.

Based on the stated problem, the purpose of this study is to establish whether the reasons for the uptake of mobile banking at Kilindini KCB branch are similar to those in the other parts of the country and also to investigate factors influencing the adoption of mobile banking at the KCB Kilindini branch,

Mombasa. The unique characteristic with most customers at the branch is that majority are fully employed in the clearing and forwarding and especially international road freight industry. Most of the customers do not get time to go to the physical bank facility. The assumption is that this mobile banking product would be ideal for them.

II.   RELATED LITERATURE

Introduction

This chapter mainly contains literature review of the past studies and written documents on mobile banking as relates to factors influencing mobile banking in Kenya. The chapter has the following sections; factors influencing the adoption of mobile banking, perceived risk with regard to mobile banking, perceived cost of mobile banking, perceived usefulness and ease of use influence the adoption of mobile banking in KCB, trust in mobile banking, theoretical and conceptual framework for the study.

Theoretical framework

a.   Rogers's Classical Normal Distribution Model

The Rogers's (1983) model of diffusion is based on the classical bell-shaped normal distribution curve. The curve represents the frequency of consumers adopting a product over time. If the cumulative number of adopters is plotted, the result is an S-shaped (sigmoid) pattern. Rogers (1983) contended that the adoption curve was normally distributed because of a learning effect due to personal interaction within social systems. As the number of adopters in the system increased so did the level of interpersonal influence on non-adopters. The result of this influence on adoptions was held to follow a binomial expansion, a mathematical function that follows a normal curve when plotted over a series of successive periods.

Rogers (1983) stated that many human traits are normally distributed, whether the trait is a physical characteristic, such as weight or height, or a behavioural trait such as intelligence or the learning of information. Hence, a variable such as innovativeness might be expected to be normally distributed.

Rogers (1983) further defined innovativeness as the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system. On this basis, he proposed that adopters of an innovation can be classified into five categories. As shown on Figure 1, these categories were defined in terms of the number of standard deviations from the mean time of adoption for the population.
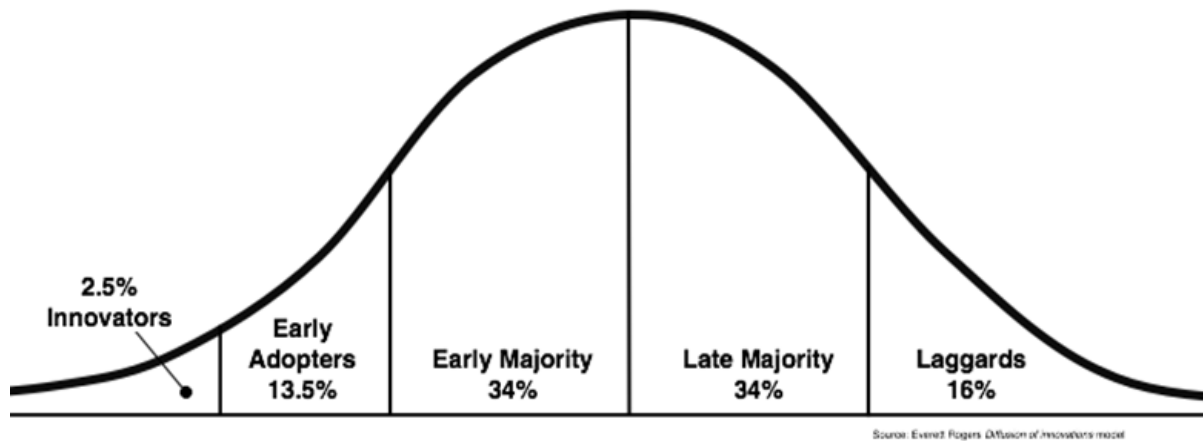
Figure 2.1. Adopter Categorisation on the Basis of Innovativeness

Rogers (1983) also developed a detailed profile of ideal types for each of the adopter categories on the basis of demographic, socioeconomic and personality characteristics. The adopter categories were analogous to the grouping of consumers in a market segmentation study. For example, innovators are venturesome, cosmopolitan in outlook, tend to be better educated, willing to take risks and are more socially mobile than their peers. In a similar manner, each of the five adopter categories was given a consumer profile (Rogers, 1983; Hawkins, Best & Coney, 1989).

A considerable amount of research has been conducted to validate the profiles of these adopter categories. The majority of this research is based on major and discontinuous innovations and examined the correlation between variables such as age, education, dogmatism, social participation, and income with time of adoption. From these studies, Rogers (1983) developed thirty one generalisations of adopter characteristics. Early adopters were found to have more years of education than later adopters. In marketing, these generalisations have been used as the basis of a prescriptive guideline for speeding up the diffusion process by using differential communications programs to reach innovators versus later adopters (Gatignon & Robertson 1985).

Hawkins, Best and Coney (1989) described this as a moving target market approach. According to this approach, once overall target market for the innovation or new product is selected, the firm should specifically target the innovators and early adopters in this target market. As the product gains acceptance, the focus of attention should shift to the early and late majority, who are now more inclined to adopt the innovation because of word of mouth reports from innovators and early adopters. Advertising themes and media vehicles should be progressively tailored to appeal to each new adopter category targeted, and the net effect is to speed up the diffusion process, resulting in increased first time sales and earlier repeat purchases.

b. Extended Technology Acceptance Model (TAM2)

The variables (risk, trust and cost) are added to the extended technology acceptance model (TAM2) (Venkatesh and Davis, 2000) to develop a research model to investigate factors influencing adoption and usage of mobile banking by the Kenya's Commercial Banks.

Since the late 1980s, technology adoption research has focused on exploring the determinants of user intentions to use new technologies. Many theories have been developed to study Information Technology (IT) adoption issues, including the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), the technology acceptance model (TAM) (Davis, 1989), the extended technology acceptance model (TAM2) (Venkatesh and Davis, 2000), the theory of planned behavior (TPB) by Ajzen (1991), the innovation diffusion theory (Rogers, 1995) and the unified technology acceptance user technology (UTAUT) (Venkatesh *et. al.*, 2003).

Literature sources suggest that financial institutions and telecommunication companies worldwide are facing a new loop on the telecommunication-information technology convergence spiral. Mobile banking has emerged as a promising new application of the next generation electronic commerce - mobile commerce. Siau *et. al.,* (2001) pointed out that mobile commerce adoption strongly depended on the user infrastructure (user-accessible mobile devices) and on the available network infrastructure (mobile telecommunications networks). Authors like Pitruzzello (1998), Lan *et. al.,* (2000), Guardini *et. al.,* 2000) and Kiesnoski (2000) argued that commerce applications, including mobile banking, cannot be implemented successfully without an integrated and seamlessly converging underlying infrastructure, and suggest approaches towards achieving coexistence and transparent handoff in a global coverage perspective. Bansai (2001) pointed out that a co-factor for the successful usage of mobile banking is the timely development of value-added mobile banking services.

Venkatesh and Davis (2000) on the other hand introduced social and organizational factors such as subjective norms, impression, quality of output and work relevance into the TAM model, and proposed the so-called extended TAM model (TAM2). TAM suggested that perceived usefulness (PU) and perceived ease of use (PEOU) were the two most important factors in explaining individual user adoption intentions and actual usage (Davis, 1989). Davis (1989) further defined PU as the degree to which a person believed that using a particular system would enhance his or her job performance. In addition, PEOU referred to the degree to which the person believed that using the system would be free of effort (Davis, 1989).

Luarn and Lin (2005) also conducted a study in Taiwan, where TAM and the theory of planned behavior (TPB) by Ajzen (1991) were combined. The study investigated the possible factors affecting the behavioral intentions of mobile banking users. These factors included perceived ease of use (PEOU), perceived credibility, self-efficacy, and perceived financial cost (Luarn & Lin, 2005).

For the purpose of this study, a research model will be developed combining relevant constructs from across the literature, as outlined in the Figure 2.2. The model consists of the original determinants of TAM2, which are PU and PEOU as well as the dependent variables Adoption of mobile banking and Actual Usage (AU). It also adds additional determinants from the literature which includes Perceived Cost, Trust, and the five facets of Perceived Risk, which are each explained in further detail below.

Figure 2.2 Research Model based on TAM2 with perceived risk, Trust and Perceived Cost

Conceptual framework

The conceptual framework in this study shows the relationship between different variables in the research. The study conceptualizes the dependent variables as Risk of mobile banking, Attitude on the perceived cost of mobile banking, perceived usefulness and use of mobile banking. The moderating variables are the government interventions and other active agencies in the banking sector and mobile service providers.
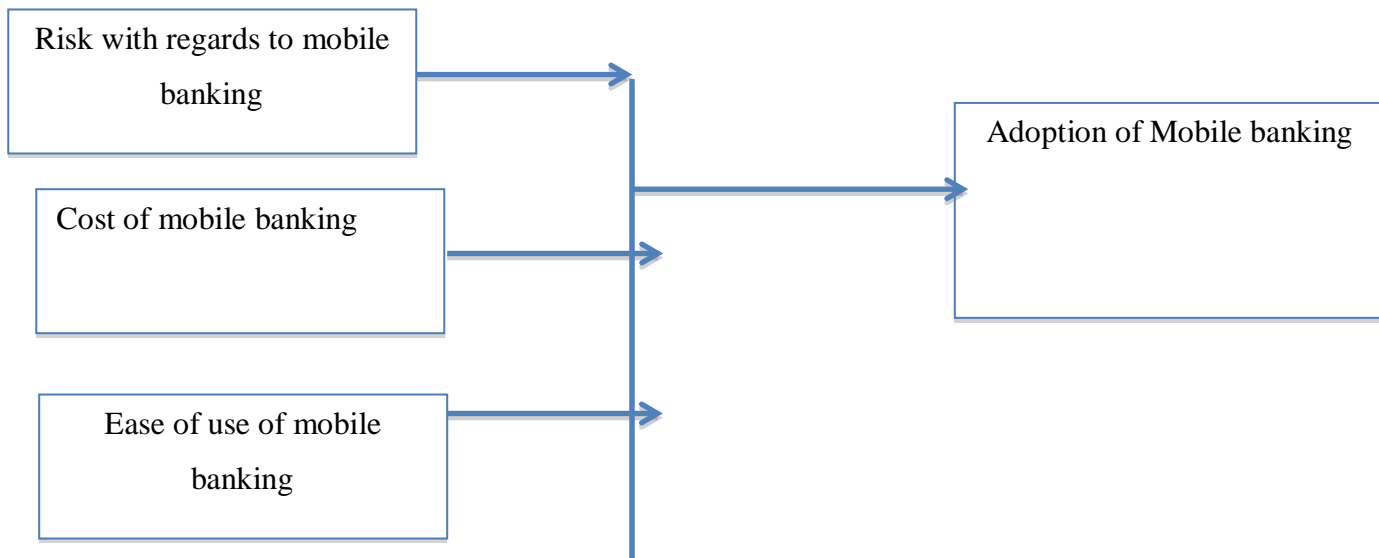

Figure 2.3 Conceptual frame work of factors influencing adoption of mobile banking

Perceived risk of mobile banking

Various studies on consumer perceptions of risks have been conducted in the context of online banking (Tan and Teo, 2000; Im, Kim & Han 2008; Wu and Wang, 2005), but the perceived risk variable has only been modeled as a single construct, which fails to reflect the characteristics of the perceived risk (Lee, 2009).

Lee (2009) conducted a study on perceived risk in the context of Internet (online) banking adoption. In this study, risk was divided into five facets; performance risk, social risk, financial risk, time risk and security risk. Given the similarities between mobile banking and Internet banking (Brown *et. al.*, 2003), these five risk facets were also used for the purpose of this study. As defined by Lee (2009), these five risks were described for mobile banking as follows.

Performance risk was referred to losses incurred by deficiencies or malfunctions of mobile banking servers (Lee, 2009). According to Littler & Melanthiou (2006), a malfunction of a banking server would reduce customer willingness to use Internet banking services, and the same applies for mobile banking, this will in turn influence the adoption of mobile banking. Security/privacy risk was defined as a potential loss due to fraud or a hacker compromising the security of a mobile banking user. In a similar study, Luarn and Lin (2005) used the construct perceived credibility', which is defined as the extent to which a person believes that using mobile banking will have no security or privacy threats. For this study, security/privacy risk will be considered to be similar to a lack of credibility. Time/convenience risk referred to a loss of time and any inconvenience incurred due to delayed payments or difficult

navigation (Lee, 2009). Considering poor network coverage in other areas sometimes.

Social risk is referred to as the possibility that using mobile banking may result in disapproval by one's friends/family/work group (Lee, 2009). Financial risk was defined as the potential for monetary loss due to transaction errors or bank account misuse (Lee, 2009). Lee (2009) & Lee, Lee and Kim (2007) found that all five risks: security, financial, time, and social and performance risks emerged as negative factors in the intention to adopt online banking. However, social risk was found to have an insignificant effect on the intention to adopt online banking (Lee, 2009) and therefore does not directly affect adoption and usage of mobile banking and hence adoption.

Im *et al.* (2008) further found out that when deploying a technology perceived by users to be high risk, managers need to emphasis ease of use. When deploying a technology perceived to be low risk, managers need to focus on communicating the usefulness of the technology.

A study by Tan and Teo (2000) on the adoption and use of Internet banking revealed that perceived risk was a significant determinant. Brown *et al.* (2003) also applied Tan and Teo's Internet banking adoption framework to the mobile banking context. Brown *et. al.*, (2003) found out that perceived risks was a significant factor affecting mobile banking adoption. However, in their studies, perceived risk was modeled as a single construct.

For this study, all the five risk facets will be adapted as antecedents of perceived risk in the research model. As per the literature review, it is hypothesized that security, financial, time, social and performance risks are more likely to have a negative effect on the uptake of mobile banking, usage and eventually influence negatively the adoption of mobile banking.

Perceived cost.

Perceived cost is defined as the extent to which a person believes that using mobile banking will cost money (Luarn and Lin, 2005). The cost may include the transactional cost in the form of bank charges, mobile network charges for sending communication traffic including SMS or data and mobile device cost.

A study by Wu and Wang (2005) on mobile commerce acceptance showed that perceived cost had minimal significance when compared to other variables such as perceived risk, compatibility and perceived usefulness. A further qualitative investigation on the same study was conducted, which revealed that perceived cost is normally a major concern when a technology is first introduced (Wu and Wang, 2005). However, when there is an emergency or sudden need, the utility benefits outweigh the cost issues. The study by Wu and Wang (2005) was conducted on respondents with an average income level of US$650 per month which was equivalent to approximately Ksh 55,250. This income level was regarded as being appropriate, implying that the users could afford mobile commerce.

Technological development has provided opportunities for service providers to develop their services and offer customers more flexibility. As a consequence, banks have launched multiple service access methods via new delivery channels like ATM, internet and mobile phone (Laukkanen & Pasanen, 2007). Low-cost banking can bring into its fold a considerable group of consumers who formerly could be served only at too high a cost (Datta, Pasa, & Schnitker, 2001). One issue driving future mobile banking is the cost efficiency pressures from supply side. Payment transaction costs vary. Quite often wireless capability is built into financial institution's software platform, leaving maintenance and upgrades as the only added costs (Mattila and Pento 2002; McCall, 2002).

Relative advantage is concerned with the degree to which an innovation is perceived as being better than the idea it supersedes. The degree of relative advantage is often expressed as economic profitability, social prestige, and savings in time and effort, immediacy of the reward or as decrease of discomfort (Rogers, 1995). According to Mallat (2007), the cost of a payment transaction has a direct effect on consumer adoption and usage if the cost is passed on to customers. Transaction costs should be low to make the total cost of the transaction competitive. The transaction costs of sending money through the mobile payment technology are lower than those of banks and money transfer companies.

In their studies in India, Rajanish & Sujoy (2011) found that the cost of availing the mobile financial services was a common matter of concern among the villagers who were interviewed. People wanted to know whether they would need to purchase a new handset for using mobile financial services (MFS) and were also eager to know the cost of transaction for availing this service. People were ready to pay a small amount (in the range of one rupee to two rupees) per transaction for using MFS. They were aware and appreciated the fact that using MFS would save them a lot of time, effort and money that they currently spent for accessing banking and financial services through the existing channels of delivery. Hence, cost of the MFS is an important factor that would determine the adoption of the services among the rural population. Given the fact that majority of the rural population falls within the lower income group, the total cost of availing the services need to be minimized for ensuring faster adoption and enhanced usage of mobile banking.

This study however focuses on a population with low (Middle class) disposable income. According to Karnani (2009), people with low income have very low purchasing power and are price sensitive. According to Guesalaga and Marshall (2008), the consumption pattern of the people with low income in developing countries concentrates mainly on basic needs such as food, housing and household goods; with less spending on information and communication technology (ICT). Therefore, perceived costs should be considered with regards to the factors influencing mobile banking. For this study, perceived cost of mobile banking is included in the research model as having a direct effect on the mobile banking performance. Hence, it is anticipated that the perceived cost of mobile banking services is likely to negatively influence the adoption of mobile banking.

Perceived ease of use

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).

Perceived ease of use is a significant factor affecting acceptance of a new technology or even information systems.

Prior research has empirically found positive relationship between ease of use and usefulness on the use of e-banking .W.C Poon (2008).

With mobile commerce users can use their mobile phones to send and receive messages and make transactions any time from any places without having to be in a specific location.

N. Mols, P. Bukh (1999) stated that the diffusion of electronic banking is more determined by customer acceptance than by seller offers. Not enough is known about the perception and evaluation of customers on the ease of use and customer satisfaction with regard to mobile banking. A number of people who have tried mobile banking services will not be active users, due to the perception they have. The study also examines the impact perceived ease of use has on mobile banking adoption. Individual expectation regarding accuracy, network speed, user friendliness and convenience play a big role on how the user will perceive usefulness and ease of use of mobile banking.

Empirical Review

Al-Jabri (2012) studied adoption of mobile banking by looking at the application of diffusion and innovation theory. A set of technical attributes was investigated in the study and how mobile banking adoption is influenced by the attributes in a developing nation like Saudi Arabia.

The study used diffusion of innovation as a base-line theory to investigate factors that may influence mobile banking adoption and use. The objective of this research was to examine the potential facilitators and inhibitors of mobile banking adoption. The study was guided by six hypothesis including: relative advantage having a positive effect on mobile banking adoption; Complexity having a negative effect on mobile banking adoption; Compatibility having a positive effect on mobile banking adoption; Observability having a positive effect on mobile banking adoption; Trial ability having a positive effect on

mobile banking adoption; and perceived risk having a negative effect on mobile banking adoption.

The findings suggest that banks, in Saudi Arabia, should offer mobile banking services that are compatible with various current user requirements, past experiences, lifestyle and beliefs in order to fulfill customer expectations. With better mobile banking support and provision of variety of services, the more useful customers perceive mobile banking to be and to increase their level of adoption. Hence, bank's attention should focus on understanding customer behavior and designing reliable mobile banking systems that will meet their needs and provide useful and quality services. In addition, banks should focus on communicating information that emphasizes the relative advantage and usefulness of mobile banking compared to other banking channels like physical presence to the bank or using ATM machines. Banks must seek to reduce risk perceived by their customers by offering specific guarantees protecting them and taking their complaints seriously and urgently. According to Koivu (2002) uptake of mobile phone in Kenya has been unprecedented. The trend of continued reliance on mobile devices to execute monetary transaction is steadily gaining momentum though there are factors influencing the adoption of mobile banking.

Yang, K.C.C., (2005) in his study on exploring factors affecting adoption of mobile banking, use the Technology acceptance model (TAM), touched on these factors; attitude, innovativeness and perceived usefulness. Part of this study suggested that apart from TAM factors there were other key factors that affect the adoption of mobile banking .Factors like, consumer innovativeness, past adoption behavior technology cluster adoption age and gender.

Luarn, P. & Lin, H-H., 2005 ,on their study titled toward an understanding of the behavioral intention to use mobile banking, used the TAM model and Theory of planned behavior(TPB).They looked at several factors including perceived credibility, perceived self efficacy and perceived financial cost.

The researchers had the view that TAM overlooks a very key construct; trust in mobile commerce, hence there were extensions of TAM that were introduced in the study to focus on the mobile users intentions to uptake the technology.

III.   RESEARCH METHODOLOGY

Research design

A Descriptive cross sectional study design was used in this research. The study aimed at collecting information from the respondent in relation to their access to Mobile banking services in KCB Bank mobile banking services. The research was conducted using a purely quantitative method. Data was gathered through interviewer administered questionnaires.

Target Population

The target population was account holders in KCB Kilindini branch which offers mobile banking services. Non account holders were included in the survey in order to help find out the factors that influence adoption of mobile banking services. The study included all the account holders operating under KCB's M-Banking service platform in Kilindini branch. Respondents included business people, personal account holders, and corporate customers. This study was carried out within Kilindini area. Purposive sampling was used to select the study location.

Sample and sampling technique

A simple random Sampling Method was used to choose the study participants from a sampling frame of 300 customers, both corporate and individual customers. From this sampling frame, a sample of 169 respondents were chosen, according to Krejcie and Morgan (1970) sample determination table as shown in Appendix V.

Instruments and the validity and Pilot testing

The questionnaire was written in English to ease data collection. There was a random call back of five percent of five percent of respondents, and a questionnaire was re administered to check the consistency of the answers given. The questionnaire was standard for all respondents. Data was collected in the banking hall by well trained research assistants, who interviewed respondents using a pre tested interviewer administered questionnaire.

Data entry and analysis.

Data was entered for completeness, comprehensibility and reliability before coding. Data was entered and analysed using SPSS. Frequencies and proportions were used for descriptive analysis. The study used regression analysis method, where the dependent variable were factors influencing the adoption of mobile banking in Kenya's Commercial Banks; and the independent variables was the component of perceived risk, perceive the cost and its impact and perceived ease of use.

Regression analysis was used for analytical statistics and the following analytical model was adopted:

$$Y = ą + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + C$$

Where;

Y   Adoption of mobile banking in Kenya's Commercial Banks

X_1 is a component of perceived risk

X_2 perceive the cost and its impact

X_3 perceived ease of use.

ą Constant value of y when x = 0

β Coefficient of variables X_1, X_2, X_3, X_4

C Error margin

Results were presented in the form of tables.

IV.   RESEARCH FINDINGS AND DISCUSSION

Questionnaire return rate

Out of the 169 questionnaires prepared and send out to respondents, only 103 questionnaires were fully filled and returned. The response rate was therefore 60.9%. According to Mugenda and Mugenda, (2003), a population response above 30% is considered sufficient. The response rate was therefore sufficient to make informed decision from the analysis.

Reliability Analysis

This study adopted Cronbach's Alpha as a reliability measure. The reliability of an instrument refers to its ability to produce consistent and stable measurements. The reliability is expressed as a coefficient between 0 and 1.00. The higher the coefficient, the more reliable is the test. The findings indicated that risks with regards to mobile banking had a coefficient of 0.908; Cost of mobile banking had a coefficient of 0.905, and ease of use had a coefficient of 0.849. All constructs depicted that the value of Cronbach's Alpha are above the suggested value

of 0.5 thus the study was reliable (Nunnally & Bernstein, 1994; Nunnally, 1974). On the basis of reliability test it was supposed that the scales used in this study is reliable to capture the constructs.

Background information

The study sought to establish the background information of the respondents in an effort to ensure the sampling was done effectively. The study sought to determine the gender, age, level of education and how long they have worked in their current positions. The findings were presented in table 4.1 below;

Table 4.1 Section A

	Frequency	Percent
Gender		
Male	81	78.64
Female	22	21.35
Total	103	100
Age		
18 - 24	27	26.2
25-34	37	35.9
35-44	31	30.1
Above 45	8	7.8
Total	21	100
Mobile phone ownership		
Have a mobile phone	96	93.2
No mobile phone	7	6.8
Total	103	100
Bank Account		
Have a bank account	90	87.4
No bank account	13	12.6
Total	103	100
Subscription to Mobile Banking		
Subscribed	21	20.4
Not subscribed	82	79.6
Total	103	100
Ease of use of mobile banking technology		
Complicated and difficult to use	98	97
Easy to use	5	3
Total	103	100
Risk of using mobile banking technology		
Very risky	41	40
Risky	34	33
Slightly risky	1	1
Not risky	6	6
No idea	21	20
Total	103	100
Satisfaction with verification process		
Satisfied	70	71
Not satisfied	33	30
Total	103	100

Source; Researcher (2015)

The findings on the age of the respondents indicated that majority of the respondents 78.6% were male while 21.3% were female. This implies balanced gender representation.

The findings on the age bracket of the respondents indicated that majority of the respondents 35.9% were of age between 25-34 years, 30% were aged between 35-44years, 26.2% were of age between 18-24 years and 7.8% were above 45 years. This implies that study collected data from informed respondents who understood their banking needs.

The findings of the study on mobile phone ownership indicate that 93.2% had mobile phones while only 6.8% lacked mobile phones. On bank accounts ownership, the study found that 87.4% of respondents had bank accounts while 12.6% lacked access to banking services. These findings imply that the respondents were informed banking product consumers who made informed decisions

The findings of the study on the number of years the respondents indicate that a cumulative 73% of the respondents associated a high level of risk with use of mobile banking. 20% of the respondents did not understand the risks associated with mobile banking. These findings indicate that the respondents who had some understanding on the uses and benefits of mobile banking found the platform risky for their money.

Section B: Analysis of key variables

Table 4.2: Section B

Statement	Mean	%Mean	SD
I think that interaction with mobile banking does not require a lot of mental effort	3.86	77.2	1.22
I think that it is easy to use mobile banking to accomplish my banking tasks	4.54	90.8	0.58
When transaction errors occur, I worry that I cannot get compensation from banks	4.14	82.6	1.04
It would take me lots of time to learn how to use mobile banking services	3.55	74.2	1.31
I would not feel totally safe providing personal privacy information over mobile banking	4.61	94.3	0.56
When transferring money through mobile banking, I am afraid that I will lose money due to careless mistakes such as wrong input of account number and wrong input of the amount of money	4.10	82.0	1.01
I'm worried about use mobile banking because other people may be able to access my account	4.06	81.2	1.03
I think the transaction fee (bank charges) is expensive to use	4.23	84.6	0.84
I would not feel secure sending sensitive information across mobile banking	4.04	80.8	1.08
I think the mobile phone cost for mobile banking is expensive	4.53	90.4	0.58
It is easy to use and learn how to use Mobile banking system	3.97	79.4	1.14
It requires sufficient skills to operate on Mobile banking platform	3.86	77.2	1.22

People feel totally unsafe providing personal privacy information over mobile banking. The 94.3% respondents who agreed that they would not feel totally safe providing personal privacy information over mobile banking can imply this. The cost of mobile banking is expensive and hence a big hindrance to adoption of mobile banking. This is evident by the 90.4% of respondents who felt that mobile phone cost for mobile banking is expensive.

The other interesting finding is that respondents interviewed dissociated the notion that low mobile banking adoption could be as a result of complexity associated with use of mobile banking protocol. 90.8% of respondents interviewed felt that it was easy to use mobile banking to accomplish their banking tasks. That implies that the adoption rate has nothing to do with ease of operation but other pertinent reasons.

Stated differently, but with the same meaning, respondents felt the transaction fee (bank charges) for using mobile banking was expensive to use. That is quite agreeable, with 84.6% of respondents agreeing that use of mobile banking was more costly comparatively. The other biggest worry that most respondents had was that when transaction errors occur, they worry that they may not get compensation from banks. 82.6% of the interviewed respondents shared this sentiment. The worry can be fully justified bearing in mind that whenever an error occurs during the conventional in-hall banking, a customer can always seek further clarification from a bank official. In mobile banking, any ambiguity in user prompting instructions could end up giving different messages to different customers, and this can easily lead to costly mistakes on their side. To further re-confirm the fear, 82.0% of respondents interviewed feared that through transferring money through mobile banking, they would easily lose money due to careless mistakes. This is a true reality since majority of mobile money transfers either through *Mpesa*, or *Airtel* money transfer, has at one point or another sent money to the wrong destination at least once or even twice. That fear according to findings has been a stumbling block in the mobile banking adoption process.

The other impediment is the fear of giving out sensitive personal information when you don't know the end recipient. 80.8% of respondents interviewed felt that they would not feel secure sending sensitive information across mobile banking platform. There have been reported cases where customers have been conned through shady phone conversations, with fraudsters posing as bank officials. 79.4% of respondents were in agreement that it was easy to use and learn how to use mobile banking system. Therefore this further re-affirms the earlier notion that it is not the complexity of use that was deterring customers from adopting mobile banking. Even so, a further 77.2% of respondents thought that it required some sufficient skills to operate on mobile banking platform. This is true with all banking products. 77.2% of respondents agreed that interaction with mobile banking does not require a lot of mental effort. Therefore, this implies that the skill level threshold for using the mobile banking technology was not high at all, and that most people could easily learn to use it.

V.   SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of findings

This chapter presents summary, conclusions and recommendations about this study. The general objective of this study was to establish factors influencing the adoption of mobile banking in Kenya's Commercial Banks: A case of Kenya commercial bank (KCB) Kilindini branch. The study sought to specifically assess the component of perceived risk, perceived impact of cost, and perceived usefulness of mobile banking, on mobile banking adoption.

On the first specific objective of assessing the impact of perceived risk on adoption of mobile banking, the study had the following. People feel totally unsafe providing personal privacy information over mobile banking. The 94.3% respondents who agreed that they would not feel totally safe providing personal privacy information over mobile banking can imply this. Most respondents worry that they may not get compensation from banks if they lost their money through erroneous transactions-related mistakes, associated with mobile banking. The other impediment is the fear of giving out sensitive personal information when you don't know the end recipient. 80.8% of respondents interviewed felt that they would not feel secure sending sensitive information across mobile banking platform. The study therefore found perceived risk to be one of the key factors impeding the adoption of mobile banking.

The second specific objective sought to establish the effects of perceived impact of cost on adoption of mobile banking. The cost of mobile banking was high and hence a big hindrance to adoption of mobile banking. This was evident by the 90.4% of respondents who felt that mobile phone cost for mobile banking was expensive. The study therefore concludes that cost was a key factor stopping people from adopting mobile banking.

The third objective was to establish the influence of perceived usefulness and perceived ease of use of mobile banking, on mobile banking adoption. 79.4% of respondents were in agreement that it was easy to use and learn how to use mobile banking system. Therefore this further re-affirms the earlier notion that it is not the complexity of use that was

deterring customers from adopting mobile banking. Even so, a further 77.2% of respondents thought that it required some sufficient skills to operate on mobile banking platform. This is true with all banking products. 77.2% of respondents agreed that interaction with mobile banking does not require a lot of mental effort. Therefore, this implies that the skill level threshold for using the mobile banking technology was not high at all, and that most people could easily learn to use it. The study therefore concludes that perceived usefulness and ease of use of mobile banking did not affect mobile banking adoption.

Conclusion based on findings

On the first specific objective of assessing the effect of perceived risk on adoption of mobile banking, the study found perceived risk to be one of the key factors impeding the adoption of mobile banking. The second specific objective sought to establish the effects of perceived impact of cost on adoption of mobile banking. The study concludes that cost was a key factor stopping people from adopting mobile banking. Lastly, on the influence of perceived ease of use of mobile banking on mobile banking adoption, the study concludes that perceived ease of use of mobile banking did not affect mobile banking adoption.

Limitations of Study

Limitations to this study include the small sample size, which may not allow for generalization of the study to other parts of the country. The study is also expected to be constrained by financial resources and time limitations. A lot is expected to be undertaken within limited time that is available and not all respondents can respond to the study and that might affects the amount of data collected. The researcher will try as much as possible to obtain information from the respondents' interventions.

Recommendations based on findings

i.   The study recommends that commercial banks invest more in promotional communication drives to educate and reassure the market of the safety of using mobile banking.

ii.   The study also recommends that commercial banks focus more on ways of profitably bringing down the cost of mobile banking transactions to entice more people into adopting the technology.

iii. The study also recommends that commercial banks come up with safety security features to ensure that consumers feel secure conducting business on the mobile banking platform

iv.   Lastly, the study only focused on Kilindini KCB branch, which is a very small area compared on the vast mobile banking market countrywide. Therefore the study recommends more studies on mobile banking adoption to be conducted in other areas of the country to find out if there could be any similarities.

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APPENDIX I: A MAP SHOWING KILINDINI POSITION IN KENYA
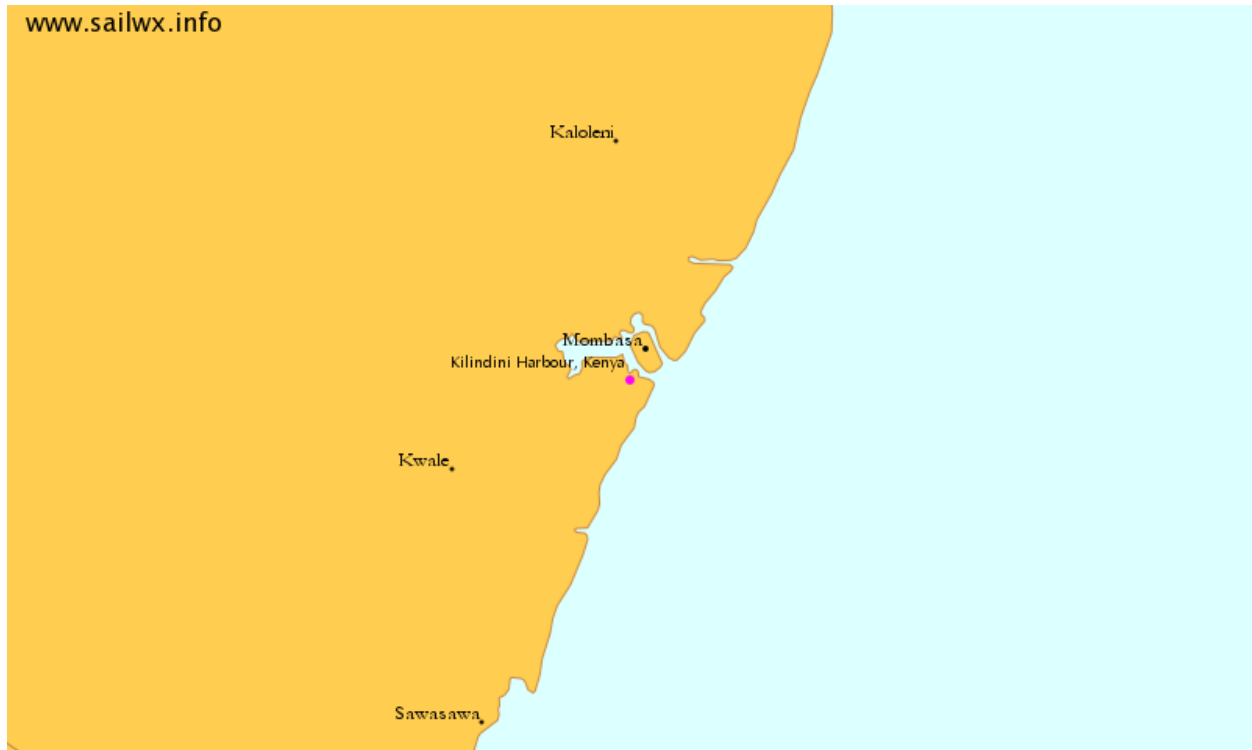
Source: www.sailwx.info

APPENDIX II: TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

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