DETERMINANTS OF ADOPTION OF MOBILE PHONE BANKING BY THE BASE OF PYRAMID [BOP] CUSTOMERS OF COMMERCIAL BANKS IN KENYA

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DECLARATION

STUDENT'S DECLARATION

I declare that this research project is my original work and has not been presented to any other university for the award of a degree.

Signature _____ Date _____

Susan Njoki Kariuki Reg No. D61/75326/2009

SUPERVISOR'S DECLARATION

This research project has been submitted with my permission as the University Supervisor.

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DEDICATION

This research is dedicated to all my family members particularly my husband Jediel Muriuki Marangu, my son Jayden Muthomi Muriuki, my parents, my sisters, my brothers and friends for their inspiration, support, encouragement and understanding throughout the research period.

God bless you all.

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ABSTRACT

This study sought to establish the determinants of adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks. This study used descriptive survey. The target population was all the customers that hold accounts in Commercial Banks operating in Kenya as at 31st December, 2011. The study employed purposeful sampling to pick 10% of the commercial banks to participate in the study. The eligibility criterion for selection was the bank must have adopted mobile banking services. The research used convenient sampling to arrive at the BOP respondents. The target number of customers was ten (10) per bank. The researcher relied on the customers who were in the banking hall giving questionnaires to ten customers randomly with the aim of getting the required data. Self administered questionnaires were used to collect primary data. Descriptive statistics was used to analyze the data.

The study found that adopters of m-banking service had acquired a great deal of trust in the new channel, primarily due to the clear marketing by the provider and the strong pre-existing ties with the local prepaid talk-time agents, who sell the new service as a trustworthy channel to their low-income customers. One of the reasons for some users to shift to m-banking for remittance transfers could be because it is half the price of the formal alternative, for example the postal money order that was being used previously. On perceived risk, the study further concludes that mobile banking makes banking fast, network problems make mobile banking inconvenient, learning to use mobile banking is easy, banks are trustworthy, it is easy to learn mobile banking and it helps in accomplishing banking tasks. The study recommends that banks should work towards putting in place the necessary technological advancements in order to enhance its adoption among the customers at the bottom of the pyramid.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the study

The convergence of telecommunication and banking services has created opportunities for the emergence of mobile commerce, in particular mobile banking. Over the last few years the mobile phone banking has grown very fast through out the world bringing about growth in markets and still continues to grow at a rapid pace. According to GSM Association (GSMA) and Ovum, the number of people who had subscribed to mobile phone exceeded 2.5 billion. It is most useful where the commercial banks are located far away from customers' residencies and one may be required to travel a long distance to get to the nearest bank. So many people are adopting the new technology of banking at the convenience of their offices, homes and even as they travel.

Mobile banking services has provided time independence, convenience and promptness to customers, along with cost savings. The advent of mobile phone banking has enabled people to bank easily and at their own convenience. Mobile banking presents an opportunity for banks to expand market penetration through mobile services (Lee, Lee & Kim, 2007). According to the Price Waterhouse Coopers (2010) report, there is significant growth in the use of mobile phones. The use of mobile banking can make basic financial services more accessible, minimizing time and distance to the nearest retail bank branches (PWC, 2009).In the recent past there has been increased partnering of banks and mobile phone service providers to be able to provide the mobile phone banking services.

Base of pyramid (BOP) are the low income earners. There are possible benefits for using mobile banking; however questions still remain about whether low-income customers will adopt mobile banking in a scale that would make a meaningful economic impact. The question is, will low income customers view banking through their mobile phones as reliable and trustworthy, or risky to adopt this service? (PWC, 2006). Prahalad (2005) argues that there is a fortune at the Bottom of the Pyramid (BOP) economic segment (meaning poor or low-income people). Karnani (2007, 2009) argues against Prahalad's notion, indicating that the poor do not have purchasing power and are price sensitive.

The banking industry is making investments into the mobile banking infrastructure for effective provision of mobile banking service to the low-income market. This research examined the factors influencing the adoption of mobile banking by the Base of Pyramid (BOP) customers of commercial banks in Kenya.

1.1.1 Customers at the Base of Pyramid (BOP)

Base of pyrmid is the largest but poorest socio-economic group. Prahalad (2005) argued that the global poor constitute a fortune at the Base of the Pyramid and that the private sector should target these vast untapped rural markets in developing countries with low-cost services and appropriate business strategies. According to Prahalad (2005) there are more than four billion people at the BOP living on less than $2 per day purchasing power parity (PPP), in both developing countries and least-developed countries. This study draws on various definitions, ranging from $2 per day PPP (Prahalad 2005; Karnani 2007; Louw 2008) to an average household income of $29.61 per day (Chipp and Corder 2009; SAARF 2009).

The developing world unlike the developed world is often characterized by fragmented or nonexistent distribution channels (Anderson and Billou 2007). This negatively impacts on the poor's ability to generate income and improve their quality of life (Vachani and Smith 2008). Jenkins et al. (2010) view appropriate innovative technology and partnerships as enablers in expanding reach and distribution in low income markets. Anderson and Billou (2007) describes that companies which are successful and profitable in serving the poor have pursued strategies of experimentation in developing a unique combination of product and service offering. He also describes a 4A's model of availability, affordability, acceptability and awareness which provides a framework against which innovation in BOP products and services may be assessed.

1.1.2 The Concept of Mobile Phone Banking

The terms Mobile Phone banking and mobile banking (M-Banking) are used interchangeably. The term M-Banking is used to denote the access to banking services and facilities offered by financial institutions such as account-based savings, payment transactions and other products by use of an electronic mobile device. A United Nations report reveals that half of the globe now pays to use a mobile phone with the fastest growth taking place in Africa. Much of the take-up

is driven by money transfer services that allow people without bank accounts to send money speedily and safely. This gives banks every reason to partner with mobile phone providers to give their services and products through cell phones so as to reach as many customers as possible and bring many more on board; hence the need to study the factor influencing adoption of mobile phone banking.

Mobile banking started with the creation of services by banks which could be accessed through the mobile phone. These facilities aimed at enabling customers access information relating to their accounts. Subsequent innovations have seen the mobile banking phenomena continue to grow steadily. Mobile banking takes several dimensions of execution all representing a new distribution channel that allows financial institutions and other commercial actors to offer financial services outside traditional bank premises.

Porteous (2006) asserts that mobile banking has the potential to be transformational owing to various facts. First, it uses existing mobile communications infrastructure which already reaches unbanked persons. Secondly it may be driven by new players, such as mobile phone industry operators, with different target markets from traditional banks who are able to harness the power of new distribution networks for cash transactions. These include airtime merchants, who extend the reach beyond the conventional tellers or ATM networks of banks. In addition it may be cheaper than conventional banking, if the offering is competitive enough.

Mobile banking has yielded a multiple effect on the number of solutions available to clients. This is in addition to more efficient transactional environment and the high substitution of banking points. Porteous (2006) distinguishes two aspects of mobile banking: Additive and transformational characteristics. Additive aspects are those in which the mobile phone is merely another channel to an existing bank account. Mobile banking is additive when it merely adds to the range of choices or enhances the convenience of existing customers of mainstream financial institutions. Transformational characteristics arise when the financial product linked to the use of the phone is targeted at persons who do not hold formal bank accounts with the conventional banking institutions. Sarker and Wells (2003) assert that the only single access requirement or barrier to the resultant mobile banking will be the mobile phone.

The transformational mobile banking is made available by mobile phone service providers as part of their value added services. It is embedded among other services within the service providers menu. The perceived difference between mobile service providers mainly lies on the pricing strategy, quality and scope of services as well as the pricing strategy. The mobile banking services are available to mobile phone users on request and if one is a holder of a bank account. The collective access points of mobile banking are numerous and widespread. The service vests a heavy reliance on airtime distributors who double as agents. It is these agents who decide on the most strategic points to locate their service outlets. This highly differs from the conventional banking systems whereby banks will only be located in major urban centers.

1.1.3 Adoption of Innovation

Adoption of innovation is the acquiring of anew product or service which requires a decision be made or an action to be taken. In recent years profound technological changes among which is the advent of e-commerce or the exchange of products and services and payments through telecommunication systems have been witnessed. Aladwani (2001) identified it as the fastest growing area for businesses. The monetary value of products and services exchanged electronically was projected to be approximately US$ 7 trillion (Sanders 2000) and based on the results of the recent survey many respondents felt the estimates may have been surpassed by the close of year 2011.Most industries have been influenced in different ways by ecommerce and the banking industry has been subjected to this technological change (Bradley and Stewart 2003). It is evident that banks and other financial institutions in developed and emerging markets are embracing e-banking.

The tremendous increase in number of people adopting Mobile phone 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 Mobile phone banking, perceived to offer such advantages as ease of use.

It had been projected that more than 32 million households globally will bank online by 2003 (Simpson 2002). Banks and other financial institutions have moved to e-banking in their efforts to cut costs while maintaining reliable customer service (Kolodinsky and Hogarth 2004). However, as the industry embraces these new opportunities they have to contend with issues and face challenges that arise in the context of banking risks. As such, an innovative and proactive approach to risk management is vital as banks move into the new territory (Pennathur 2001).The strategic choice that a bank makes in response to these issues and challenges will determine the future of e-banking and the degree of effectiveness it realises in its context.

1.1.4 Commercial banks in Kenya

Banks represent a significant and influential sector of business worldwide that plays a crucial role in the global economy. Commercial banks are financial intermediaries that serve as financial resource mobilization points in the global economy. They channel funds needed by business and household sectors from surplus spending to deficit spending units in the economy. A well developed efficient banking sector is an important prerequisite for saving and investment decisions needed for rapid economic growth. A well functioning banking sector provides a system by which a country's most profitable and efficient projects are systematically and continuously funded. The role of banks in an economy is paramount because they execute monetary policy and provide means for facilitating payment for goods and services in the domestic and international trade.

From Central Bank of Kenya (CBK) website December 2011 there were forty six banking and non bank institutions, fifteen micro finance institutions and one hundred and nine foreign exchange bureaus. Over the last few years, the Banking sector in Kenya has continued to grow in assets, deposits, profitability and products offering. The growth has been mainly underpinned by 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. The larger proportion of

savings comes from small depositors, who are at the Base of pyramid (BOP), lending is skewed in favor of large private and public enterprises in urban areas.

With the continued need to grow with the technology most of the banks have gone a step further in providing mobile phone banking by partnering with mobile phone service providers. More often than not concentration is given to the corporate clients overlooking the customers who are at the BOP whom without the bank would be losing quite a large amount of money that comes from these small but many clients. In order to provide this service more effectively and efficiently there is need to know what would make a customer adopt the service or turn it down.

1.2 Research Problem

The convergence of telecommunication and banking services has created opportunities for the emergence of mobile commerce, in particular mobile banking. Mobile phones have become a tool for everyday use, which creates an opportunity for the evolution of banking services to reach the previously unbanked population through mobile banking. Mobile banking provides benefits for both the mobile banking service provider and the low-income customer, that is, people at the BOP. In order for commercial banks to effectively convince the low-income population to adopt the mobile phone banking, there is a need for proper understanding of their behaviour.

Various studies on mobile commerce and mobile banking, with focus on different factors and contexts have been done both locally and internationally. For instance, Wu and Wang (2005), did a study on impact of electronic funds transfers; (Tan & Teo, 2000; Im, Kim & Han 2008; Wu & Wang, 2005) did a study on the effectiveness of mobile banking in sub-Saharan Africa while (Brown, Cajee, Davies, & Stroebel, 2003; Walker, 2004) did a study on innovation strategies adopted by commercial banks to enhance the institutions competitive edge.

In Kenya, Karanja et al. (2008) conducted an exploratory study that examined the factors that influence the adoption of cell phones in Kenya on the other hand, Wanjau (2010) conducted a study to examine the factors affecting the adoption of a wireless delivery channel (mobile banking service) in retail banks in Kenya.

From the above, there has been an emphasis on mobile phone baking but there has not been a study on factors that influence the adoption of Mobile phone banking by the base of pyramid (BOP) customers. Therefore this study sought to establish the determinants of adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks.

1.3 Research Objectives

i. To establish the determinants of adoption of mobile phone banking by base of pyramid customers (BOP) of commercial banks in Kenya
ii. To determine the effect of perceived risk, trust, and cost on the adoption of mobile phone banking by the BOP economic segment in Kenya.

1.4 Value of the study

The study would make policy makers of commercial banks, understand the needs of the consumer, including factors influencing the intention to use or adopt mobile banking in the low-income economic segment, in order to stimulate demand and secure healthy returns on investment. A clear understanding of these factors would enable commercial banks to develop suitable marketing strategies, business models, processes, awareness programmes and pilot projects along the avenue of mobile phone banking.

The study would also give academicians and other researchers, basis for further research on mobile banking by the BOP. It would also help regulators of the banking industry to identify the crucial aspects of Mobile phone banking structures that should be emphasized in the marketing matrix. Given the many scams and financial fraud reported in many corporations and the vast sums of wealth of shareholders destroyed thereby, findings of the study should help regulators play their role effectively.

To the management and the board that act on behalf of shareholders of the banks the study would give guidelines on the key value aspects of mobile banking.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter critically reviews the literature that pertains to the developments in Kenyan mobile banking situation and defines the Bottom of the Pyramid (BOP) customers. The literature review then discusses a technology acceptance of mobile phone banking banking. It further reviews the determinants of adoption of mobile phone banking, which includes perceived usefulness, perceived ease of use, perceived risk, perceived cost and trust.

2.2 Customers at the Base of the Pyramid (BOP) and mobile phone banking adoption

According to Prahalad (2005), the distribution of wealth and the capacity to generate incomes in the world can be captured in the form of an economic pyramid. There are more than four billion people at the BOP living on less than $2 per day purchasing power parity (PPP), in both developing countries and least-developed countries (Prahalad 2005). Karnani (2007) used the 2001 World Bank estimates of 2.7 billion people at the BOP living on less than $2 per day (PPP). Karnani (2009) used an estimated figure of 2.5 billion people on the BOP. Jaiswal (2008) used the 2005 World Bank estimates of 2.4 billion people living in low-income countries. PPP in international dollars is used rather than United States dollars to have a better comparison, since PPP exchange rates take into account the local prices of goods and services not traded internationally (cost of living) (Karnani, 2007; Jaiswal, 2008; Louw, 2008). Prahalad (2005) argues that there is a fortune at the Bottom of the Pyramid and that the private sector and entrepreneurs should target these vast untapped rural markets in developing countries with low-cost services and appropriate business strategies. Guesalaga and Marshall (2008), in a study comparing the buying power index (BPI) of BOP consumers in different geographic areas, found that more than 50% of the purchasing power resides in the BOP segment in developing countries. However, the BOP consumption concentrates mainly on food, housing, and household goods (Guesalaga & Marshall 2008).

A Kenyan perspective study by Chipp and Corder (2009) provides individual and household definitions of BOP based on a living standard measure (LSM). The BOP is defined to be individuals with a personal income of $8 per day (with 21 working days per month) and all adults with a household income of $13 a day (Chipp & Corder, 2009). Considering the mobile

banking context of this study, the definition of BOP will be based on various definitions reviewed in this study, ranging from $2 per day PPP (Prahalad, 2005; Karnani, 2007; Louw, 2008) to an average household income of $29.61 per day (Chipp & Corder, 2009; SAARF, 2009).

2.3 Mobile phone Banking and mobile phone banking adoption

Currently, mobile banking is implemented through three different technology solutions: browser-based applications, messaging-based applications and client-based applications (Kim *et al*., 2009; Tiwari & Buse, 2007, p. 84). The browser-based application is essentially a Wireless Access Protocol (WAP)-based internet access (Kim *et a*l., 2009).This requires a compatible mobile phone which is WAP-enabled. The mobile phone is used to access banking portals through the internet. For example, by using a registered mobile number, the customer sends a predefined command to the bank, and then uses text messages to conduct transactions with the bank. An example of messaging-based applications is the Unstructured Supplementary Service Data (USSD), which has compatibility with most mobile phones. Existing mobile banking applications based on USSD includes WIZZIT in Kenya (WIZZIT, 2005), M-PESA in Tanzania (Camner & Sjöblom, 2009), M-PESA in Kenya (Nedbank, 2010b) and FNB mobile banking (FNB, 2010). On client-based applications, special software is installed in the mobile phone. An example of a client-based application is what is called the SIM Toolkit standard (STK) (Tiwari & Buse, 2007).

Mobile Commerce (m-commerce) defined as business transaction conducted through mobile communication networks or the Internet (Siau & Shen, 2003). M-commerce can offer value to consumers through convenience and flexibility by enabling time and place independence (Kim *et al.*, 2009; Venkatesh *et al.*, 2003). Mobile banking is an application of m-commerce which enables customers to access bank accounts through mobile devices to conduct and complete bank-related transactions such as balancing cheques, checking account status, transferring money and selling stocks (Kim *et al.*, 2009; Tiwari & Buse, 2007, p. 64). Luo, Li, Zhang and Shin (2010), defined mobile banking as an innovative method for accessing banking services via a channel whereby the customer interacts with a bank using a mobile device (e.g. mobile phone or personal digital assistant (PDA)). There are challenges associated with m-commerce,

and specifically mobile banking. Mobile devices with a small screen size, limited screen resolution and uncooperative keypad may make it difficult for the customer to use mobile banking (Kim *et al*., 2009). Mobile banking is also vulnerable to information and transaction eavesdropping risk, just like other e-commerce applications such as Internet banking (Siau *et al*., 2003).

2.4 Determinants of adoption of mobile phone banking

The field of M-Banking is fairly new and fast evolving. It also rests at the overlap of several domains including those of banking, telecommunications and security. The overlap substantially raises issues of operational or regulatory concern. There are compelling drivers for M-Banking as well as significant constraints that could restrict its growth. The major drivers and constraints of adopting mobile banking are ; perceived risk, trust and perceived cost related to adoption of mobile banking.

Lee (2009) conducted a study on perceived risk in the context of Internet (online) banking adoption. The perceived risk was divided into five facets (performance risk, social risk, financial risk, time risk and security risk), which provided a more in-depth understanding of the characteristics of risks regarding Internet banking (Lee, 2009). Mobile banking may be considered an extension of Internet banking, but with its own unique characteristics given that a cell phone is used rather than a web browser on a personal computer (Brown, Cajee, Davies & Stroebel, 2003).

These five risks can be described for mobile banking as follows: (i) Performance risk: refers 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 customers' willingness to use banking services, and a similar notion applies in the context of mobile banking (ii) Security/privacy risk is the 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 the extent to which a person believes that using mobile banking will have no security or privacy threats (iii) Time/convenience risk is the loss of time and any inconvenience incurred due to the delays of receiving payments or the difficulty of navigation (finding appropriate services and relevant commands) (Lee, 2009) (iv) Social risk: refers to the possibility that using mobile banking may result in disapproval by

one's friends/family/work group (Lee, 2009) and (v) Financial risk: is 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, emerged as negative factors in the intention to adopt online banking.

A study by Im *et al*. (2008) found 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 (Im *et al.*, 2008).

Perceived cost is defined as the extent to which a person believes that using mobile banking will cost money (Luarn & 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 & 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 (equivalent to approximately R5000). This income level was regarded as being a good financial status, implying that the users could afford mobile commerce (Wu & Wang, 2005).

According to Karnani (2009) people at the BOP have very low purchasing power and are price sensitive. According to Guesalaga and Marshall (2008), in developing countries, the consumption pattern of the BOP 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 adoption of mobile banking, especially in the BOP context.

Customers' trust is recognised as a critical factor for the success of mobile banking. With the surge of both electronic commerce (e-commerce) and mobile commerce (m-commerce), more

studies have been conducted on the conceptual structure, formation of the mechanisms of trust and effects of trust (Bhattacherjee, 2002; Kim, Shin & Lee, 2009; Kim, Chung & Lee, 2010; Shin, 2010). In a study by Kim *et al.* (2009) which examined the effect of initial trust in mobile banking user adoption, trust was defined as a psychological expectation that a trusted party will not behave opportunistically. In Kim, Chung and Lee (2010), trust was defined as a feeling of security and willingness to depend on someone or something.

Kim *et al.* (2009) further makes a distinction between initial trust and experience or knowledge-based trust. This study will focus on initial trust, as users are more likely to have less experience with service providers with regard to the use of mobile banking. A study by Siau and Shen (2003) classified trust into two categories: trust of technology and trust of mobile banking service providers. This is supported by Lee, Lee and Kim (2007) in a study that focused on three trust dimensions: trust in bank, trust in mobile network provider and trust in wireless infrastructure. A study by Bhattacherjee (2002) provided a definition and measurement of the consumer's trust of an e-commerce service provider, based on the three dimensions or typology of trust: ability, integrity and benevolence. Bhattacherjee (2002) defined these as follows; (i) Ability refers to the perception of the consumer about the competency and salient knowledge of the mobile banking service provider to deliver the expected service; (ii) integrity refers to users' perceptions that the service provider will be fair, honest and adhere to reasonable conditions of transactions; (iii) Benevolence refers to the extent to which a service provider will demonstrate receptivity and empathy towards the user.

In the mobile banking context, trusting intentions represents users' willingness to engage in subsequent transactions with the service provider (Bhattacherjee, 2002). A study by Gu, Lee and Suh (2009) verified the effect of trust on behavioural intentions in mobile banking, using the trust from the banks' perspective. This indicates that trust helps reduce fraud and potential risks caused by opportunistic behaviour and provides users the ultimate benefit of getting more reliable banking services from honest banks (Gu *et al.*, 2009).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter described the proposed research design, the target population, sampling design, data collection instruments and data analysis

3.2 Research Design

This study used descriptive survey to identify, analyze and describe the determinants of adoption of mobile phone banking by the base of pyramid [bop] customers of commercial banks in Kenya.

3.3 Target Population

The target population was all the customers that hold accounts in Commercial Banks operating in Kenya as at 31st December, 2011. Customers in scope were those earning up to Kshs. 79000 per month, banking with the fourty four commercial banks in Kenya.

3.4 Sampling Technique

The study employed mixed sampling techniques to select the sample for the study. Kothari (2004) states that mixed sampling techniques employ both probability and non-probability sampling procedures. First, the study employed purposeful sampling to pick 10% of the commercial banks to participate in the study. As such the target population was 4 commercial banks. The eligibility criterion for selection was the bank must have adopted mobile banking services.

Secondly; the researcher used convenient sampling to arrive at the BOP respondents. The target number of customers was ten (10) per bank. This generated a total of 40 respondents from which the study sought information from. The researcher relied on the customers who were in the banking hall giving questionnaires to ten customers randomly with the aim of getting the required data.

3.5 Data Collection

Self administered questionnaires were used to collect primary data. The questions were both close and open ended. The researcher collected data by personally interviewing the customer. The questionnaires had two sections where the first section sought to find out general

information about the respondents while the second section sought to find out information on determinants of adoption of mobile phone banking.

3.6 Data Analysis

The data was edited for accuracy,uniformity,consistency completeness and arranged to eneble coding and tabulation.It was then coded, through creation of a codebook and entered directly into the analysis software. The created data set was then cleaned for potential coding errors or those arising from entry before embarking on analysis.

Descriptive statistics was used whereby data was summarized in the form of bar charts and frequency tables where applicable. Statistics such as mean and standard deviation for continuous variables were presented where appropriate based on the level of measurement so as to provide information on the typicality of responses.

This was aimed at finding out the determinants of adoption of mobile phone banking by BOP customers of Commercial Banks in Kenya.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research methodology. Having identified the problem of study in chapter one, reviewed existing literature and shown gaps of knowledge in chapter two, chapter three explained the methods that the study used to collect data. The study findings are presented on to establish the determinants of adoption of mobile phone banking by the Base of Pyramid [BOP] customers of commercial banks in Kenya. The data was gathered exclusively from the questionnaire as the research instrument. The questionnaire was designed in line with the objectives of the study.

The study targeted 40 respondents in collecting data with regard to the determinants of adoption of mobile phone banking by the Base of Pyramid [BOP] customers of commercial banks in Kenya. 27 out of the 40 sample respondents filled-in and returned the questionnaires making a response rate of 68%. This commendable response rate can be attributed to the data collection procedure, where the researcher personally administered questionnaires and waited for respondents to fill in, kept reminding the respondents to fill in the questionnaires through frequent phone call and picked the questionnaires once fully filled. The response rate demonstrates a willingness of the respondents to participate in the study.

4.2 Demographic Characteristics

The customers of mobile phone banking at the base of the pyramid receive different income levels. This is mainly according to the nature of the jobs they do. As such, the study sought to find out respondent's level of income per month.

Table 4.0: Respondent's Level of Income Per Month

Income Range	Frequency	Percentage
Less than 20,000	2	7
Kshs. 20,000-39,000	2	7
Kshs. 40,000- 59,000	15	56
Kshs. 60,000- 79,000	8	30
Total	**27**	**100**

From the findings, 56% of the respondents indicated that they earned between Kshs 40,000 and 59000 per month, 30% of them indicated that they earned between Kshs 60,000 and 79000 per

month, 7% of the respondents earned between Kshs 20,000 and 39,000 per month as well as another 7% o them who earn less than 20,000 per month. This implies that the respondents who participated in this study enjoy different income levels per month owing to the differing types of jobs they engage in to generate incomes.

Table 4.1: Respondent's Level of Education

LEVEL OF EDUCATION	Frequency	Percentage
Technical Apprenticeship	5	18.5
Secondary school	5	18.5
University graduate	17	63
Total	**27**	**100**

The customers of mobile phone banking at the base of the pyramid have different academic qualifications. The results are shown in Table 4.1

The study results reveal that, 63% of the respondents indicated that they were university graduates, 18.5% of the respondents indicated that they had completed secondary school while only 18.5% of the respondents indicated that they had completed technical apprenticeship. These results imply that all the respondents had at least secondary school level of education and hence understood the information sought by this study. These findings further imply that all the respondents were academically qualified to respond effectively to the issues sought by the study.

4.3 Adoption of Mobile Phone Banking by Base of Pyramid Banking Customers

The research sought to ascertain whether the respondents preferred using mobile phone banking. From the findings, 75% of the respondents indicated that they preferred using mobile phone banking to banking halls while 25% of the respondents indicated that they did not prefer using mobile phone banking to banking halls. The study sought to find out whether respondents use Mobile phone banking. From the findings, 94% of the respondents indicated that they use Mobile phone banking while only 6% of the respondents indicated that they did not use Mobile phone banking.

The study sought to find out the respondents level of agreement with various statements that relate to adoption of mobile phone banking by the Base of Pyramid [BOP] customers of commercial banks in Kenya. Accordingly, a scale of 1 to 5 where 1was strongly disagree and 5 was strongly agree was provided. The results are given in Table 4.2.

Table 4.2: Adoption of Mobile Phone Banking by Base of Pyramid Banking Customers

Statements	Strongly disagree	Disagree	Do not know	Agree	Strongly agree	Mean	Std. Dev
I think that using mobile banking makes banking fast	8.3	5.6	5.6	27.8	52.8	4.1	1.3
I think that learning to use mobile banking is easy.	13.9	13.9	29.1	29.2	13.9	3.9	1.3
I think that interaction with mobile banking does not require a lot of mental effort.	5.6	8.3	5.6	63.9	16.7	3.8	1.0
I think that it is easy to use mobile banking to accomplish my banking tasks.	13.9	8.3	30.6	47.2	0	3.9	1.4
Network problems makes mobile banking inconvenient	11.1	5.6	2.8	22.2	58.3	4.1	1.4
Mobile banking services may not process payments incorrectly.	5.6	55.6	22.2	11.1	5.5	2.6	1.0
I am afraid that I may lose money when transferring incase I put the wrong account number/mobile number	33.3	13.9	19.4	33.3	33.3	3.5	1.3
When transaction errors occur, I worry that I cannot get compensation from banks.	27.8	30.6	22.2	5.6	13.9	2.5	1.3

Table 4.2 (Continued….)

I'm sure that if I decided to use mobile banking and something went wrong with the transactions, my friends, family and colleagues would think less of me.	38.9	16.7	8.3	11.1	25.0	2.7	1.7
Using mobile banking services would inconvenience me because I would have to waste time fixing payments errors if they occur	30.6	22.2	8.3	33.3	5.6	2.6	1.4
I worry that someone might get my private information for example pin number and use it to defraud my account	36.1	19.4	33.3	11.1	36.1	2.6	1.5
I am worried about using mobile banking because other people may be able to access my account.	41.7	11.1	19.4	22.2	5.6	2.4	1.4
I would not feel secure sending sensitive information across mobile banking.	33.3	19.4	11.1	19.4	16.7	2.7	1.5
I think that it is expensive to use mobile banking	5.6	66.7	19.4	2.8	5.6	2.0	1.1
Network providers make it expensive to use mobile banking	11.1	33.3	47.2	8.3	11.1	2.4	.9
Mobile banking service providers have the skills and expertise to perform transactions in an expected manner.	8.3	13.9	16.7	61.1	8.3	3.5	.8
Mobile banking service providers are fair in their conduct of customer transactions.	2.8	16.7	19.4	61.1	2.8	3.3	1.0
Mobile banking service providers are fair in their customer service policies following a transaction.	27.8	5.6	11.1	50.0	5.6	3.4	.9
Mobile banking service providers are open and receptive to customer needs.	36.1	16.7	47.2	5.6	36.1	3.0	1.4
Mobile banking service providers make good-faith efforts to address most customer concerns.	83.3	11.1	5.6	0	0	3.1	.9
I believe banks are trustworthy.	30.6	22.	36.3	11.1	30.6	3.9	.8
I believe mobile network providers are trustworthy.	16.7	5.6	61.1	16.7	16.7	3.3	1.0

As shown in Table 4.2, the respondents disagreed that using mobile banking makes banking fast as shown by a mean of 4.1, network problems makes mobile banking inconvenient as shown by a mean of 4.1, learning to use mobile banking is easy as shown by a mean of 3.9, it is easy to use mobile banking to accomplish my banking tasks as shown by a mean of 3.9, they believe

banks are trustworthy as shown by a mean of 3.9, interaction with mobile banking does not require a lot of mental effort as shown by a mean of 3.8, wireless infrastructure can be trusted as shown by a mean of 3.6, they are afraid that they may lose money when transferring incase they put the wrong account number/mobile number as shown by a mean of 3.5 and that mobile banking service providers have the skills and expertise to perform transactions in an expected manner as shown by a mean of 3.5. They were neutral or unaware that mobile banking service providers are fair in their customer service policies following a transaction as shown by a mean of 3.4, mobile banking service providers are fair in their conduct of customer transactions as shown by a mean of 3.3, they believe mobile network providers are trustworthy as shown by a mean of 3.3, mobile banking service providers make good-faith efforts to address most customer concerns as shown by a mean of 3.1, mobile banking service providers are open and receptive to customer needs as shown by a mean of 3.0,

Further, the respondents indicated that they are sure that if they decided to use mobile banking and something went wrong with the transactions, friends, family and colleagues would think less of them as shown by a mean of 2.7, they would not feel secure sending sensitive information across mobile banking as shown by a mean of 2.7, mobile banking services may not process payments incorrectly as shown by a mean of 2.6, using mobile banking services would inconvenience me because they would have to waste time fixing payments errors if they occur as shown by a mean of 2.6, they worry that someone might get my private information for example pin number and use it to defraud their account as shown by a mean of 2.6 and that when transaction errors occur, they worry that they cannot get compensation from banks as shown by a mean of 2.5.

However, the respondents agreed that they are worried about using mobile banking because other people may be able to access their account as shown by a mean of 2.4, network providers make it expensive to use mobile banking as shown by a mean of 2.4 and the respondent thought that it is expensive to use mobile banking as shown by a mean of 2.0.

4.4 Relationship between the Independent Variables and the Dependent Variable

Inferential analysis is utilized in this study to determine if there is a relationship between an intervention and an outcome, as well as the strength of that relationship. The inferential

statistics analysis aimed to reach conclusions that extend beyond the immediate data alone between the independent variables in this study. The study conducted inferential analysis to establish the relationship between the independent variables and the dependent variable of which involved a coefficient of determination and a multiple regression analysis. The independent variables in this study included perceived risk, trust, and cost while the dependent variable was adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks in Kenya.

4.4.1 Relationship between Adoption of Mobile Phone Banking by Bank's BOP Customers and perceived risk cost and trust.

The study sought to establish coefficient of determination; a measure of how well a statistical model is likely to predict future outcomes. The coefficient of determination, r^2 is the square of the sample correlation coefficient between outcomes and predicted values. As such it explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks) that is explained by all the three independent variables (perceived risk, trust, and cost).

Table 4.3: Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.792 (a)	.627	.303	.125

Predictors: (Constant), perceived risk, trust, and cost.

The three independent variables that were studied, explain only 62.7% of the adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks as represented by the R^2. This means the three independent variables only contribute about 62.7% to the adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks while other factors not studied in this research contribute 37.3% of the adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks.

4.4.2 Factors influencing adoption of Mobile Phone Banking by BOP Customers

The researcher conducted a multiple regression analysis so as to determine the factors influencing the adoption of mobile phone banking by the base of pyramid (BOP) customers of

commercial banks. Multiple regression is a statistical technique that allows us to predict a score of one variable on the basis of their scores on several other variables. The main purpose of multiple regressions is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable. The results are shown on Table 4.4.

Table 4.4: Regression Coefficient on Factors Influencing adoption of Mobile Banking

	Unstandardized Coefficients		**Standardized Coefficients**	**t**	**Sig.**
	B	Std. Error	Beta		
(Constant)	1.224	.312		4.358	0.000
Perceived risk	0.217	0.1440	0.185	.776	0.0387
Trust	0.299	0.0715	0.235	2.7936	0.044
Cost	0.272	0.1264	0.089	.849	0.038

Dependent Variable: Adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks**.**

From the results in the above Table 4.4, the researcher conducted a multiple regression analysis so as to determine the relationship between adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks and the three independent variables. The regression equation ($\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3}$) now becomes:

$$\mathbf{Y = 1.224 + 0.217\ X_1 + 0.299 X_2 + 0.272 X_3}$$

Whereby Y = Adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks

X1 = Perceived risk

X2 = Trust

X3 = Cost

According to the regression equation, the data findings analyzed shows that, a unit increase in perceived risk will lead to a 0.217 increase in adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks, unit increase in trust will lead to a 0.299 increase in adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks and a unit increase in cost will lead to a 0.272 increase in adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks. These results infer that trust contributes more to adoption of mobile phone banking by the base of pyramid

(BOP) customers of commercial banks, followed by cost while perceived risk contributes the least to adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks.

CHAPTER FIVE: SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of the findings from chapter four, and it also gives the conclusions and recommendations of the study based on the objectives of the study. The objective of this study was to investigate the determinants of adoption of mobile phone banking by the Base of Pyramid [BOP] customers of commercial banks in Kenya.

5.2 Summary of the Findings

The study aimed at investigating the determinants of adoption of mobile phone banking by the Base of Pyramid [BOP] customers of commercial banks in Kenya.

The study found that using mobile banking makes banking fast as shown by a mean of 4.1; that network problems make mobile banking inconvenient as shown by a mean of 4.1; that learning to use mobile banking is easy as shown by a mean of 3.9; that banks are trustworthy as shown by a mean of 3.9; that learning to use mobile banking is easy as shown by a mean of 3.9; that banks are trustworthy as shown by a mean of 3.9; that it is easy to use mobile banking to accomplish my banking tasks as shown by a mean of 3.9.

From the inferential statistics, the three independent variables (perceived risk, trust, and cost) that were studied, explain only 62.7% of the adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks. The study also found that taking all other independent variables at zero, a unit increase in perceived risk lead to a 0.217 increase in adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks. A unit increase in trust will lead to a 0.299 increase in adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks whereas a unit increase in cost will lead to a 0.272 increase in adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks.

5.3 Conclusion

The study concludes that the uptake of m-banking services in a location depends on whether adoption was forced or optional depending on the kind of employment of the households' wage earners. Adopters of m-banking service have acquired a great deal of trust in the new channel,

primarily due to the clear marketing by the provider and the strong pre-existing ties with the local prepaid talk-time agents, who sell the new service as a trustworthy channel to their low-income customers.

The cost of the m-banking service with respect to other formal and informal remittance channels available in a location, is a determinant of how our subjects adopts and use the m-banking service. One of the reasons for some users to shift to m-banking for remittance transfers could be because it is half the price of the formal alternative, i.e. the postal money order that they were previously using. For transacting with or between the unbanked, compared to the nearest formal, secure alternatives, m-banking is lower in cost, though it remains more expensive than using informal channels like family or friends.

On perceived risk, the study further concludes that mobile banking makes banking fast, network problems make mobile banking inconvenient, learning to use mobile banking is easy, banks are trustworthy, learning to use mobile banking is easy and it is easy to use mobile banking to accomplish my banking tasks. Majority of persons seeking M-Banking customer attach a high consideration to the monetary consequence of enrolling into a banking facility. The absence of opening account balance boosts their preference for the service.

These results infer that trust contributes more to adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks, followed by cost while perceived risk contributes the least to adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks.

5.4 Limitations of the Study

The researcher encountered various limitations that were likely to hinder access to information that the study was looking for.

Some of the respondents approached were reluctant in giving information fearing that the information sought would be used to intimidate them or print a negative image about them or their banks. The researcher handled the problem by carrying an introduction letter from the University which assured them that the information they gave would be treated confidentiality and it would be used purely for academic purposes.

There was also reluctance to respond to questionnaires by the respondents who thought it was a bother and a waste of time. This was due to some reservations held by the target population. This hence led to generalization during the analysis and presentation of the data made from those who responded to represent the views of the rest of the respondents. The researcher countered the limitation by making prior arrangements with the respondents as well as making personal calls and visits to remind the respondents to fill in the questionnaire.

The scarcity of funds to do this research was also another problem that the researcher faced since the field work expenses were not part of the tuition fee that is set by the University. This made the research to be limited to only 10% of commercial banks in Kenya and not do a the whole population survey for all financial institutions in Kenya which would have given more accurate results. This was countered by giving room for further research to be conducted on other financial institutions by other researchers.

5.5 Recommendation

5.5.1 Recommendation with Policy Implications

The study found that using mobile banking makes banking fast, network problems make mobile banking inconvenient and that trust contributes more to adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks, followed by cost while perceived risk contributes the least to adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks. The study therefore recommends that the banks as well as the mobile service providers should be focused in terms of their needs and using the right technology to achieve goals, rather, than acquiring technology of mobile banking. They should carry out a countrywide campaign to allay fears of security/safety issues like complications of the mobile banking procedures and lack of awareness security limits of the mobile banking service.

Secondly, in order to give the growing trends of Information and Communication Technology (ICT) which involves mobile banking in banks a vision in the right directions, the study recommends that banks should work towards putting in place the necessary technological advancements in order to enhance its adoption among the customers at the bottom of the pyramid. Banks have identified impediments on the way of transitioning to mobile banking is

the flaw in infrastructure for mobile banking. The cellular service providing companies have not yet provided sufficient facilities and services for which the banks are not yet able to properly deliver mobile banking services to their customers.

Finally, the study recommends that the customers and the government, the relevant policy makers should improve the policies governing the industry and use of ICT in banking for quality of their services to the customers to minimize the problems that they get in using the service. Interest should be aimed towards improving services that ensure that the customer get account balance details in time and with the least cost possible, request last transaction details is offered and pay bills for electricity and insurance.

5.5.2 Recommendations for Further Studies

The study found that the three independent variables that were studied, explain only 62.7% of the adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks. The study therefore, recommends that further research be conducted to investigate the other factors (37.3%) that affect adoption of mobile phone banking by the base of pyramid (BOP) customers of commercial banks.

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APPENDICES

Appendix A: Survey Questionnaire: Determinants of adoption of mobile banking at the BOP

Please complete the section by ticking the options applicable to your statement on the space ( ) provided.

Name: (Optional)……

SECTION A

Q1 What is your income level per month?

a. less than Ksh 20000 ( )
b. Ksh 20000-39000 ( )
c. Ksh 40000-59000 ( )
d. Ksh 60000-79000 ( )
e. Ksh 80000 and above ( )

Q2 What is the level of you education?

a. No formal or some primary education ( )
b. Primary school completed ( )
c. Secondary school completed ( )
d. Technical/apprenticeship ( )
e. College/university/post graduate ( )

Q3 Do you use Mobile phone banking? a. Yes ( ) b. No ( )

Q4 Do you prefer using mobile phone banking to banking halls? A. Yes ( ) b. No ( )

Section B

Please complete the following questionnaire on a scale of 1 to 5. 1-strongly disagree and 5-strongly agree ticking your answer on the boxes provided

	Construct	**Strongly disagree 1**	**Disagree 2**	**Do not know 3**	**Agree 4**	**Strongly agree 5**
i	I think that using mobile banking makes banking fast					
ii	I think that learning to use mobile banking is easy.					
iii	I think that interaction with mobile banking does not require a lot of mental effort.					
iv	I think that it is easy to use mobile banking to accomplish my banking tasks.					
v	Network problems makes mobile banking inconvenient					
vi	Mobile banking services may not process payments incorrectly.					
vii	I am afraid that I may lose money when transferring incase I put the wrong account number/mobile number					
Viii	When transaction errors occur, I worry that I cannot get compensation from banks.					
ix	I'm sure that if I decided to use mobile banking and something went wrong with the transactions,					

	my friends, family and colleagues would think less of me.					
x	Using mobile banking services would inconvenience me because I would have to waste time fixing payments errors if they occur					
xi	I worry that someone might get my private information for example pin number and use it to defraud my account					
xii	I am worried about using mobile banking because other people may be able to access my account.					
xiii	I would not feel secure sending sensitive information across mobile banking.					
xiv	I think that it is expensive to use mobile banking					
xv	Network providers make it expensive to use mobile banking					
xvi	Mobile banking service providers have the skills and expertise to perform transactions in an expected manner.					
xvii	Mobile banking service providers are fair in their conduct of customer transactions.					
xviii	Mobile banking service providers are fair in their customer service policies following a transaction.					
xix	Mobile banking service providers					

	are open and receptive to customer needs.					
xx	Mobile banking service providers make good-faith efforts to address most customer concerns.					
xxi	I believe banks are trustworthy.					
xxii	I believe mobile network providers are trustworthy.					
xxiii	I believe wireless infrastructure can be trusted.					

Thank you for completing this questionnaire.

Kind Regards