AN INVESTIGATION OF MOBILE PHONE BANKING ADOPTION AMONG THE INFORMAL SECTOR IN KENYA: CASE STUDY OF NAIROBI CITY

ELIZABETH NJERI KAHURA

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF BUSINESS ADMINISTRATION DEGREE, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

September 2011

DECLARATION

Declaration by the Student

I declare that this research project is my original work. It has not been presented for any degree or diploma in any other college for any academic accreditation.

Signed: .....**Date:** 11/11/2011

ELIZABETH KAHURA

This Management Research Project has been submitted for examination with my approval as University Supervisor.

Signed: .....**Date:** *if ft*

MUNYAO MULWA

Lecturer, Department of Management Science.

ACKNOWLEDGEMENT

This research project marks the end of years of personal sacrifice, which was made possible by encouragement and support of several persons. Only a few are mentioned here, although the appreciation and gratefulness in my heart goes out to many more others.

ALL GOOD THINGS COME FROM GOD. The decision to start this program, and the strength to continue with it upto the end, came about because of the good health and the unique privileges He has granted me in my adult life. I got the good health and privileges FOR FREE from the Almighty God. Thank you FATHER.

I wish to express my deepest and sincere appreciation for continuous encouragement and concern shown through the years by my Mother, Teresia Kahura and Dad Bernard Kahura, Your endless reminders on the values of good education have seen me overcome mighty challenges to be where I am now. I wish also to thank my siblings for their understanding and encouragement, especially in the days when I couldn't attend to family functions or participate in small talks with them in order to meet tight deadlines.

My fiance and best friend Dennis Gitonga, for your inexorable effort to ensure that I was committed to completing my Masters. I remember your sentiments "*gumbaru ina timelines".* I have proven that it sure does.

I wish to also thank my lecturers, Mr. C. N. Kariuki, Mr. J. T. Kariuki, and the late Mrs. Ombok, for the very stimulating discussions they generated in the lecture rooms. Classmates and colleagues also rendered invaluable support through participation in class discussions. I thought time moved faster whenever these wonderful people gave lectures. Particular gratitude also goes out to the many employees of the various telecommunication institutions who were so ready and willing to offer information in the course of the research.

The understanding and patience shown by my supervisor, Mr. Munyao Mulwa, made the conclusion of this work possible. I shall forever be indebted to you for the support you gave me in this project. Mwalimu, you do truly understand the difficult balancing act one has to achieve between class, work and family. Mwalimu, *ahsante.*

ABSTRACT

Mobile banking services in Kenya have achieved substantial growth since inception in March 2007 when MPESA service was introduced by the leading mobile phone service provider Safaricom. All the three other mobile phone service providers have since introduced the M-banking concept and have seen massive growth eating into the conventional banking business.

The study's main objectives was to determine the extent of adoption of the mobile phone banking technology, factors influencing the adoption and to determine the challenges facing the Mobile Phone Banking in Kenya. The study which was carried out as a case study of Nairobi CBD adopted descriptive survey research design targeting business persons in the informal sector in Nairobi city CBD. Random sampling technique was used to identify the respondents to the study where a total of 100 respondents were targeted. Questionnaire was the main instruments for data collection which were then analyzed with the assistance of Statistical Software for Social Scientists (SPSS). Eighty four (84) filled questionnaires were returned for data analysis.

The study revealed that mobile phone banking services dominate the money transfer service industry. In a five point rating, the M-banking indicated a rating of 90% as compared to the others which include; Commercial banks (67%), Postal money transfer services (44%) hand delivery (54%) and internet banking at 25%. The main reason given for the adoption of the M-banking was the technological advancement and the accessibility. Most respondents' interview viewed the adoption of the M-banking to be riding on the accessibility of the service (25%). Others attributes considered beneficial to the adoption includes; ease to learn and use (13%), service publicity (12%), Improved technology (13%) and the ability to use the service to pay bills (11%) among others.

The respondents identified various challenges which were considered to hinder the adaptation of the M-banking concept to include; fraud and illegal transactions (35%), Delays in network (21%), lack of enough float at the agents outlets (18%).The researcher, following the conclusion of the study had various recommendations to make. Most prominent of these include; the need for mobile phone service providers to boost their capacities to reach more people who may need the M-banking services especially in the informal sector, delays should be eradicated to allow for efficiency and effectiveness and establishment of more secure outlets. Others recommendations were that there is need for more surveillance and monitoring for fraud.

LIST OF ABBREVIATIONS

ATM	Automatic Teller Machine
CEO	Chief Executive Officer
CBK	Central Bank of Kenya
DSTV	Digital Satellite Television
EFT	Electronic Funds Transfer
FSD	Financial Sector Deepening
GDP	Gross Domestic Product
IS	Information Systems
KCB	Kenya Commercial Bank
KEPSS	Kenya Electronic Payment & Settlement System
KPLC	Kenya Power & Lighting Company
P2P	Peer to Peer
RTGS	Real Time Gross & Settlement System
SIM	Subscriber Identity Module
SME	Small and Medium Enterprises
TPB	Theory of Planned Behavior
TAM	Technology Acceptance Mode

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

DEFINITION OF TERMS

Micro enterprise	Micro enterprises are those enterprises with a turnover of less than Ksh. 5 million and less than 5 employees
Small enterprise	Small enterprises are business enterprises with a turnover of less than Ksh. 8 million and between 5-49 employees.
Medium enterprise	Medium enterprises are business enterprises with a turnover of less than Ksh. 100 million and between 50 - 150 employees.
Mobile Banking	Financial transactions, payments, credit applications and other banking transactions through a mobile device such as a mobile phone.
Safaricom	Is the leading mobile phone network provider. It part of the Vodafone Group which own over 40% shareholding
M-PESA	Mobile banking transfer service offered by Safaricom. "Pesa" is the Swahili word for cash; while "M" is for mobile Sagentia

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Mobile phone has emerged world over as the most significant provider of financial services to those without access to formal banking. 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. This is more notable in the third world countries as opposed to the first or second world (Global Innovation Outlook Report, 2007). The mobile phone is the one pervasive device which has fewer barriers to entry than most technologies, and it has penetrated some of the poorest economies due to the overwhelming demand for any form of telecommunications. Mobile phones have presented a unique opportunity to individuals and even companies, not only in the communications and data transfer environments, but the banking environment as well.

In regions like Africa, network coverage has continued to rise. (DFID, 2006) observes that although only 8% of people in Africa use a mobile phone, 52% of the population in low income countries as a whole lives in areas with wireless reception. This difference fuels the expectation that mobile phone connectivity and subscription will continue at rapid rates, with some analysts predicting that there would be close to 200 million mobile subscribers in Africa by end of 2010. In Countries like Kenya, Philippines, South Africa and Ivory Coast, telecommunication companies are launching mobile money banking services to cater for the large untapped market in the third world countries observes (Ndanshau and Kipokola, 2008). Recent statistics indicate that, as of August 2002, the cell phone market size in South Africa has reached 13 million subscribers, and still growing rapidly (Cellular Online, 2002). The dominating cell phone network providers being Vodacom and MTN.

Kenya has 3 dominant cell phone network providers, Safaricom, Zain and Orange and a third most recent entrant Essar, gradually gaining a market share. Mindful of the tremendous growth of the mobile phone industry, most banks have heeded the untapped

opportunity and have partnered with cell phone network providers to offer banking services to their clients. It is a fact that the mobile phones are playing an increasingly important role in the various sectors of the economy not only in first world but also in third world countries today. This is attributed to mobile phones' immense potential to act as a platform for various financial transactions. Pan Hui (2007) argues that with the mobile subscription rates constantly increasing, the number of subscribers worldwide is expected to touch a staggering 3 billion by 2011 and penetration reach 100 percent in some markets. The role of mobile phones in today's day to day life, e.g. financial, socio-economic aspects is bound to increase immensely. By comparison, the penetration of retail banking systems in most regions of the world, especially in African countries is very low (Frost & Sullivan research, 2008).

The sheer momentum behind the take-up of mobile phones not only in Africa but in the rest of the world as a whole raises the prospect that crucial day to day services such as financial services provided via mobile phones. This could have positive developmental consequences, including increasing the efficiency of services like payment systems, reducing reliance on cash as a transactional medium as well as broadening access to financial services by increasing the accessibility and lowering the cost of offering formal financial services.

Research indicates that that mobile money transfer is expected to grow tremendously in the near future. According to the research by Juniper Research in 2009, the international mobile money transfer will experience wide spread innovations and development of regulations and policies governing the mobile transfer services. The research also noted that mobile money market will considerably impact on the banking sector and revolutionizes people's perception.

1.1.1 Mobile Banking in Kenya

Kenya today has been rated as the biggest mobile banking success story in the world. This is because of the revolutionary mobile money transfer offered by Safaricom, Kenya. M-PESA mobile transfer service was launched in March 2007 by Safaricom which saw

an instant acceptance from its subscribers including the unbanked majority. All other three mobile phone service providers followed suite at different times later.

With mobile phone banking a customer experiences ease and security of movement of cash. An M-PESA customer can use his or her mobile phone to move money quickly, securely, and across great distances, directly to another mobile phone user. Experts have drawn a comparison between mobile phone banking and normal bank accounts and have pointed out that , mobile phone banking offers the prospect of increasing efficiency of the payments system in terms of ease of cash movement and potentially, expanding access to financial services. At the same time, unlike formal banking, mobile phone banking does not have stringent requirements like having a bank account. The customer does not need to have a bank account, but registers with the service provider for a mobile phone account.

In the announced 2009 financial results, the mobile money transfer services revenue was seven and a half billion Kenya shillings (safaricom.co.ke, 2010). What has characterized the Kenyan mobile landscape is a rapid uptake of various services key among them the mobile based products. Mobile phone banking is one innovation which has progressively rendered itself in pervasive ways cutting across numerous sectors of economy and industry. According to Financial Sector Deepening Kenya (2009), the most recent data available indicates that only 19% of adult Kenyans reported having access to a formal, regulated financial institution while over a third (38%) indicated no access to even the most rudimentary form of informal financial service. This leaves a percentage of more than 80% outside the bracket of the reach of mainstream banking.

Egwaikhide and Chete (2007) predict that competition for the banking industry will in future come from the telecommunication industry. More and more mobile telephony services providers across the world are embracing mobile phone banking technology, thereby entering into the realm of financial services. The pent up demand for an affordable and reliable way of holding funds while ensuring that risk levels are consigned to a minimum is consistently unfolding. A system with the potential to obliterate the historical hurdles of cost and free access which have for a long time stood in the way of

willing partakers of banking services evokes immediate attention and interest. The unprecedented uptake of mobile phone banking services in Kenya is a testament to this fact.

Agarwal & Prasad, (1997) point out that as with Internet banking adoption, it is expected that those who require a wide variety of banking products and services are more likely to want to adopt innovations such as cell phone banking. At the same time, perceived risk also plays a role in influencing the rate of adoption. McKnight, Chaudhry, & Kacmar, (2002) say that one of the major influencing factors around the establishment and use of new technologies for financial transactions is that of security and trust. The need for security of personal details and financial information is therefore critical to the success of cell phone banking. As a result, the lower the perception of risk involved in using cell phone banking, the more likely that it will be adopted. Tan and Teo (2000), demonstrate that the advantage an innovation has relative to another method is positively related to its rate of adoption. It is therefore possible to suggest that the advantages that cell phone banking offers over other banking methods would affect its rate of adoption.

1.1.2 Kenya's Informal Sector

Informal sector is commonly referred to as *jua kali* in Kenya which in Swahili means fierce sun. The name came up due to the fact that workers in the informal sector work under the hot sun. While working or selling wares in their shades. The work involved is harsh and usually done under extremely harsh conditions unsuitable for labour-neither regulated nor safe (Amenya 2007).

The sector operates at a subsistence level and often has few employees. According to World Bank (2006), the sector operates for a shorter period, and has poor access to basic amenities and few sell outside the establishments where the entrepreneurs live. In Kenya the informal sector is large and dynamic accommodating over 95% of the countries' businesses. Entrepreneurs are found here but employ only 37% of the urban population; hence there is low level of skill. The Ministry of Technical Training and Applied Technology (MTTAT) was established by the government of Kenya to develop training programs for the sector.

Defining the informal sector is the greatest challenge of most authors. The one most commonly used definition is that, the sector comprises the unregistered business activities which contribute to the officially calculated (or observed) Gross National Product (Smith, 1994). Smith further defines it as market-based production of goods and services that escapes detection in the official estimates of GDP. Africa is dominated by financial systems that have both formal and informal segments. Within the two segments there are several different types of operators that usually have very little contact with one another and whose clients often do not overlap.

Kenya's Informal Sector can be defined as "all enterprises employing less than 50 workers." This includes: home-based business, self-employed, Street traders and vendors, Temporary contracts in construction and building, (http://celak.org/econe) Informal sector businesses are characterized as subsistent rather than entrepreneurial. The informal sector in Kenya is also described as survivalist activities by people unable to find a paid job or get into an economic sector of their choice (Kinyua, 2004). The strongest of the informal sectors in Kenya is the *"Jua-Kali*" enterprise sector (where artisans work as individuals or groups in open air, in areas of motor mechanics, iron-smiths, others are electricians, carpenters, tailors, wood and soft stone carving etc.) that produce goods and services.

At the outset, four traits that serve to characterize the Informal sector can be identified; the first trait being, the Informal sector groups and organizations in Kenya has somewhere between one to fifty workers (The World Bank, 2003). The other identifier is that the groupings are young. About forty percent have been in operation for less than two years and the rest are not more than five years old. Thirdly, they are highly vulnerable to changes in the overall economy of the country and as such the macroeconomic environment plays a significant role on the growth of the firm. Finally, Kenya's informal sector tends not to live for very long? The implications of the last point are found in the organizations of the groupings, organizations and the subsequent interactions that they will have with one another. Informal sector groups and companies are varied in their makeup.

A report by the World Bank on the informal sector shows that Kenya's informal sector's growth is mainly hindered by inadequate financial system (World Bank, 2006). The same report says that though not limited to Kenyan informal sector alone, limited access to deposit and credit facilities and other financial services such as bank accounts, saving facilities provided by formal financial institutions remain some of the key challenges facing the informal sector.

Mobile Phone Banking targets customers who until now have been excluded from formal bank networks due to their remote location and small transaction volumes. With more than 46% of the population living below the poverty line, the introduction of M-PESA and other mobile money banking providers is already having huge developmental benefits for poor people in Kenya.

1.2 Problem Statement

The unbanked low income earners remain the biggest beneficiaries of the ever expanding mobile phone usage. With M-banking, the low income earners do not have to use the limited time and financial resources to go to distant places to accesses banking facilities. M-banking transactions cost less to transact as compared to charges in the bank or the automated teller machines (ATM). Allen (2003) observes that banks can make more profits handling even small money transfers and payments which dominate transfers in developing countries. But the real potential of "m-banking" may be to make basic financial services more accessible to millions of poor people across the world (GSM Association, 2006).

Research on the impacts of m-banking/payments systems in the developing world is scarce. Though there has been some research, on predictors of on adoption Cell phone banking in South Africa, and Mobile-Banking Adoption and Usage by Low-Literate, Low-Income Users in the Developing World there is none that has been carried that has mainly focused on the mobile payments products that currently exist. Less attention has been paid to the social, economic impacts of these mobile banking/payment solutions, perhaps because the systems are so new.

Garcia E. (1998) contends that technology has been the number one drive to the change in how the banking industry operates. Gone are the days of the grand, marbled lobbies which were designed to instill a sense of permanence and awe in the customer. Today the trend is more towards a residential ambience, making the customer feel at home. ATM s' were some of the innovations that affected banking trends and the most recent innovation being online banking. The number of internet users is nevertheless less in comparison to the 16 million mobile phone subscribers.

According to research findings by research solutions, on the use of mobile money transfer services by the informal sector groups, 47% of respondents said they had used their cell phones for banking services, compared to only 19% of urban respondents in 2007. The numbers were even more dramatic when the informal sector groups' users were asked about their intentions for next year: an additional 30% expected to begin using M-PESA services (Research Solutions, 2008). These informal groups included women self help groups, informal sector artisans and SME's. These informal sector groups transact with small amounts of money, ranging from hundreds to fifty thousands.

Mobile telecommunication companies have to contend with the dynamic nature of the industry in which they operate. Continuous innovation has spawned many value added products and these companies have to keep up with these developments. It has become possible to send and receive money using new technologies in the cellular telephony industry. The challenge therefore is who provides the service better than the other (Kimani, 2007). She further adds that the activities of the other stakeholders within this sector have a significant impact on the way small scale information telecommunication service providers carry out their businesses. They must be constantly on the lookout for changes in the industry and find ways of responding to them in a competitively superior fashion if they are to remain profitable.

This study is aimed at assessing the level of adoption of mobile phone banking on the informal groupings vis a viz the formal banking sector. How has mobile phone banking impacted on the informal sector and what makes the informal sector groupings opt to use mobile phone banking more and more in comparison to the formal banking?

1.4 Research Questions

The study was to answer the following questions:

1. What is the extent of Mobile Phone banking technology adoption in the informal sector?
2. What are the factors involved in the decision to adopt Mobile Phone banking technology?
3. What are the challenges facing Mobile Phone banking?

1.3 Research Objectives of Study

The general objective of the study was to investigate Mobile Phone banking technology adoption. The specific objectives of this research were therefore summarized as follows:

1. To determine the extent of adoption of Mobile Phone banking technology.
2. To establish the critical factors that influence adoption of Mobile Phone banking
3. To determine the challenges facing Mobile Phone Banking

1.4 Value of the Study

The study was undertaken to serve four main purposes:

- Add knowledge base to existing literature on adoption of mobile phone banking in the informal sector in Kenya. The study shall be of great importance to academic institutions focusing on the emerging trends in mobile phone banking as well as the informal sector. This paper contributes to the theories previously used by researchers with the interest of tracking the dynamics of mobile phone banking. It also contributes to the knowledge base of the Integrated Model Theory on the basis of providing knowledge in regards to the extent of the adoption of Mobile Phone Banking technology in the informal sector, the challenges that users face with the service and critical factors that could influence the adoption of the technology
- From the managerial point of view, the study shall help practicing managers as the decision makers to improve on mobile phone banking policies as well as

improve on the current weaknesses in the mainstream banking sector. By identifying the major reasons as to why the informal sector is moving towards Mobile Phone Banking and not the mainstream banking, the study may assist the banking management to go back to the drawing board and chart the way forward with the knowledge that Mobile Phone Banking services are here to stay and pose a threat to the traditional banking culture and functions.

- Lastly but not the least, the study shall help policy makers and lobby groups like the Kenya Bankers Association in formulation of Mobile Phone Banking policies that shall guide banks and other finance institutions in service delivery.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter introduces the review of the theoretical literature relating to the adoption of Mobile Phone Banking. It begins by reviewing the history of banking then discusses mobile phone banking technology. The literature review shall then focus on specific aspects of adoption relevant to this research in terms of how technology has been conceptualized, the factors at play as well as research into the impact of technology adoption in the informal sector. This shall be followed by application of mobile banking technology.

2.2 Banking Industry in Kenya

A suitable banking setting is considered as both the main pillar and also a stimulant of economic growth (Koivu, 2002). With the advent of technological economy, the Kenyan banking industry has emerged as a major consumer of information technology. The Banking industry in Kenya is governed by the Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK, 2009) .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 major banks in Kenya are: Barclays' bank, The KCB group, Cooperative bank, Equity bank and Standard Chartered bank. Of these, Barclays bank, Standard Chartered and KCB group have been in operation the longest. As at December 2009 there were forty eight banking and non bank institutions, fifteen micro finance institutions and one hundred and nine foreign exchange bureaus. The CBK, which falls under the Minister for Finance docket, is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system.

The need for suitable ways of getting financial resources through highly convenient means has lead to the rigorous expansion and modernization of banking methods. The huge demand by the Kenyan population for mostly financial leaning services, various institutions other than the conventional banks have joined the sector. This is mainly to reap from vast opportunities created in the banking industry. Equity bank in particular despite being the youngest in the list, is fastest growing and the most technologically aggressive bank in Kenya today. Kenyan banks are mainly concentrated in major towns all over the country with some few sparsely distributed within the countryside.

In the 1990's the major banks, for instance Barclays' bank and Standard Chartered withdrew from many rural towns in Kenya citing unpredictability (Kimani, 2005). These banks are also famous for the unpopular rules they introduced in the same period where they raised the minimum balance to Ksh. 10,000 thereby prompting an exodus of account holders who used to rely on the banks, especially civil servants who used the banks for receiving of salaries. Kenya banks have been rated some of the most expensive in the world, in terms of operating and other charges (DFID, 2005). This can perhaps explain the low numbers of account holders Kenya have in comparison with the country's population. There are less than 9 million account holders in Kenya. This is in comparison with the country's population of 36 million.

Kenyan banks have adopted the use of information and communication technologies in their business (The African Executive, 2008). Huge amounts of money have been invested in implementing the self and virtual banking services with the aim of improving the quality of customer service. Some of the ICT-based products and services include the introduction of SMS banking, ATMs, Anywhere banking software's, Core banking solution, Electronic clearing systems and direct debit among others. In mid 2005, Kenya's banking Industry moved and introduced Real Time Gross and Settlement System (RTGS) which was renamed Kenya Electronic Payment and Settlement System (KEPSS). This has the potential to facilitate transfer of financial data among banks. The introduction of e-banking services has contributed immensely towards decongestion of banking halls. This in the long run reduces long queues and saves customers a lot of time hence improving service delivery.

Most banks have in the recent past embraced internet banking. The leading banks in Kenya have been at the forefront in the launch of customer friendly mobile banking products, e.g. Barclays bank has launched a free mobile banking service called Hello money, KCB have come up with KCB Connect, Equity have Eazzy 24/7 (Market intelligence, 2009). This has been taken by market experts as the banking industry's response to the new competition front from Mobile money transfer services by the Telecommunication sector.

In Kenya, the banking industry has been expanding in terms of branch networks. This has been heightened by the introduction of the famous branchless banking system. Branchless banking which incorporate the use of EFTs, ATM cards, SMS banking among other systems. This expansion has been clearly captured by CBK annual reports since 2002. Kenyan branch network has increased by more than 15% in a period of four years from 2002 to 2006 with Nairobi having the highest number of branches. Some regions such as North East Kenya have been left behind with only four branches which hardly show increase. This indicates that many Kenyan are left un-banked throughout the country's eight provinces, as banks have customer bases concentrating in major cities. Also, the slow growth of Branches can be attributed to the rapid rise of alternatives, which include electronic financial product through mobile phones and personal computers (African Executive, 2008).

2.3 Mobile Phone Banking

The use of mobile phones across the developing countries is one of the most notable technology stories of the first decade of the millennium. Supported by user friendly prepaid cards and fairly cheap handsets, the growth in mobile phone use cannot be over emphasized. However, a good number of the new mobile users are the operators in the informal economies, with little or no access to modern financial services. In actual sense, there are more people with mobile phone than those with bank accounts (Porteous, 2006). Various initiatives have therefore been initiated to use mobile phones to provide financial services to the unbanked. These services are in various forms that include long-distance remittances, micro payments, and informal airtime bartering schemes. They also go with

various names, including mobile banking, mobile transfers, and mobile payments. Taken together, they are no longer merely pilots; in the Philippines, South Africa, Kenya, and elsewhere, these services are broadly available and increasingly popular.

Due to its intrinsic features like personalization and flexibility, M-Commerce generally promises businesses unprecedented potential in market growth, productivity and profitability (Siau, *et.al,* 2001). In the current progressively competitive financial markets, Mobile Banking can easily be seen as an attempt to provide the needed added value for customers by offering more opportunities for conducting different banking actions. There are however two factors hampering the growth of both online and Mobile Phone banking in Kenya. These are lack of or extremely little influence from the market place and government statutory restrictions that tend to limit the ability of local private firms and, individuals to make their contributions internet infrastructure (Laforet 2005). Mobile banking is still in its development phase in most countries, where small markets with few users have been reported for these markets (Goldfinger, 2002).

With the recent entrance of mobile money transfer services like M-PESA, the banks have encountered a new and formidable challenge that was not anticipated. Kenyan banks have insisted that M-PESA operates banking services (deposit and withdrawal of cash) and should therefore be brought under the Banking Act. Analysts have said that the real fear facing banks is what Safaricom is capable of, with its innovations and large network.

While commercial banks are partnering with retail chains, petrol stations, KPLC and other consumer outlets to enable their customers settle various utility bills, M-PESA service has also grown into this niche. For instance, registered customers can pay for their Safaricom Advantage (Postpay) bills as well as bills for services received from a selected number of M-PESA partners. M-PESA customers can also pay for DSTV services, pay for their investment contributions to investment groups like Zimele through M-PESA. All these were previously done through banks. Safaricom registered M-PESA users can now pay their electricity bills, buy goods and perform ATM withdrawals using M-PESA. As the list of M-PESA functions grow, there has been a cause for alarm by the commercial

banks, which explains why there has been complaints of lack of regulatory framework by the banks in as far as M-PESA is concerned.

2.4 Mobile Phone Banking In Africa

The Mobile Phone banking strategy was made available by local mobile phone service providers especially in Kenya as part of their corporate social responsibility. It however turned out to be a life changing service compared to other previous services within the services. The perceived difference between mobile service providers mainly lies on the pricing strategy, quality as well as the scope of services.

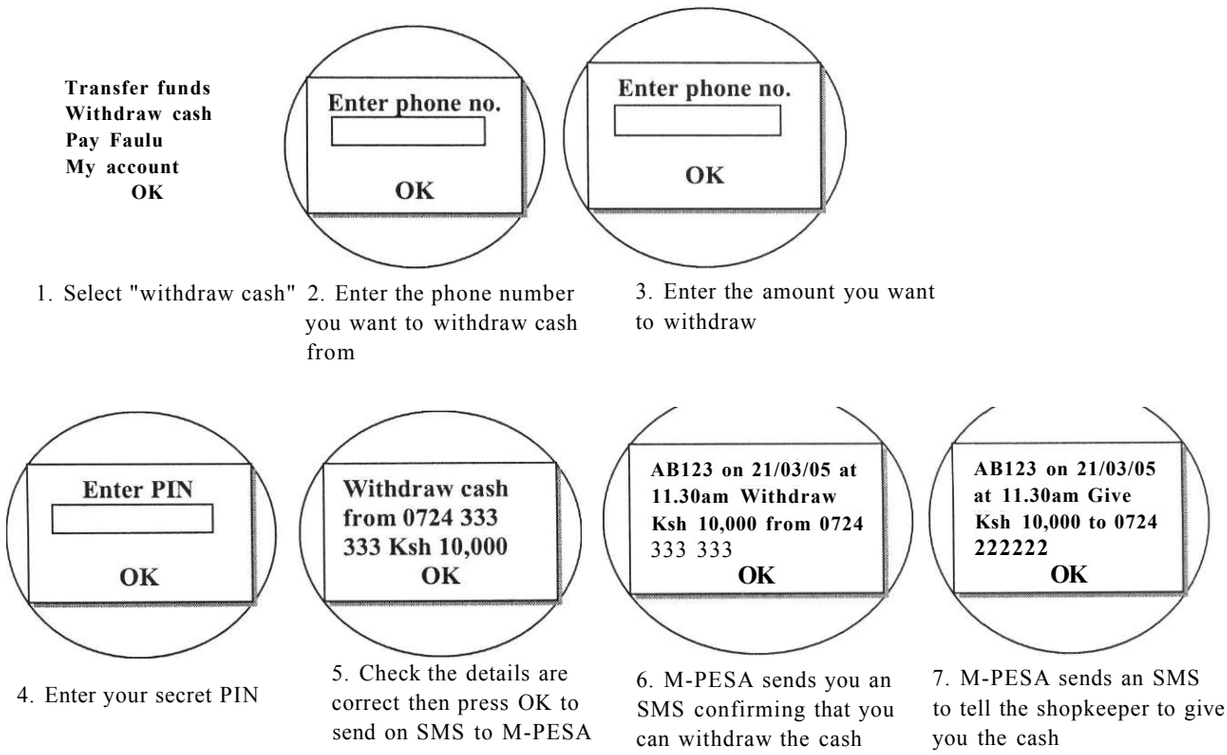
Mobile banking has no universal form but rather varies from country to country and from operator to operator; rather, purposes and structures vary from country to country. The systems quite often offer a variety of financial functions that usually include micro payment to merchants, bill-payments to various utilities, P2P transfers between private individuals, and long-distance remittances among other services. Currently, different institutional and business models deliver these systems. Some are offered entirely by banks, others entirely by telecommunications providers, and still others involve a partnership between a bank and a telecommunications provider (Porteous, 2006).

Regulatory factors, which can vary dramatically from country to country, play a strong role in determining which services can be delivered via which institutional arrangements (Mortimer-
Schutts, 2007).

2.4.2 Developments in Mobile Phone Banking

The mobile banking services are available to mobile phone users of the two major mobile services providers namely Safaricom and Zain. Safaricom's service is branded "Mpesa" and Zains service goes by the "Zap" brand name. The latest entrants i.e. Orange / Telkom and Essar have also rolled out their mobile banking services; orange money and YU cash respectively. Speaking in South Africa during a conference on mobile banking, Safaricom's CEO Mr. Michael Joseph highlighted the needs and benefits of the M-PESA service, emphasizing its value outside the main urban areas where banking infrastructure is rarely available.

The CEO recounted the origins of the M-PESA service in 2006 within a micro financing project and explained its current popularity. By saving users the hazards of carrying and transacting in cash M-PESA allows its users greater degree of mobility and flexibility. He stressed that M-PESA is a banking product. The banking infrastructure in Kenya is not well developed but there is a large network of airtime and phone dealers all over Kenya and this has played a key role in ensuring that M-PESA is an alternative to formal banking.



Source: Ignacio *et al* 2008

Figure 2.1. Example of what a customer sees on her phone in a cash withdrawal: **The case of M-PESA in Kenya**

Zain introduced its money transfer service, Zap, in Kenya after Safaricom's wildly successful M-PESA service. This was expected to allow Zain build its market share and build its customer loyalty in the face of increased competition. A unique aspect of Zap is that, its charges are much lower than Safaricom's M-PESA service. It seems obvious that

each mobile network will look to build strategic alliances with as many service providers as possible in the banking sector as well as other traditional money transfer services like Money gram, Posta Pay and Western Union who dominate the multi-billion shilling international money remittance business.

2.4.1 Technology of Mobile Phone Banking

The terms m-banking, m-payments, m-transfers, m-payments, and m-fmance refer jointly to functions that associated with mobile telephones to operate their bank accounts, store money in an account linked to their handsets, transfer funds, or even access credit or insurance products (Donner *et al,* 2008). This paper uses the compound term *m-banking/payments systems* to refer to the most common features especially the M-PESA and bill payment functions. The first targets for these applications were consumers in the developed world. Other than complementing important services offered by the conventional banking system, such as ATMs, voicemail/landline interfaces, smart cards, point-of-sale networks, and internet resources, the mobile platform gives a convenient additional method of a paperless economy (Karjaluoto, 2002). For users and subscribers in the developing world, on the other hand, the personal appeal of these m-banking/m-payments systems may actually be less about convenience and more about accessibility and general affordability (infodev, 2006).

An exploration is currently underway between local banks, mobile operators, digital hardware and software providers, regulatory authorities, and users to determine the future of m-banking/m-payments services in the developing world (infodev, 2006). Mobile phone operators in Kenya have identified m-banking/m-payments systems as a prospective service to offer clients, increasing overall client loyalty while also generating real fees (infodev, 2006). Financial institutions and intermediaries that have in the past had problems in provision of profitable and convenient services through traditional channels to poor clients will be faced out (Ivatury, 2008). M-PESA therefore came in handy to which lower the cost of serving low-income customers with essential banking services. Government regulators see a similar appeal but are working out the legal implications of the technologies, particularly concerning security and taxation.

Most m-banking systems in the developing world enable users to do three main things. It enables them to store value (currency) in an account easily accessible via their mobile handset. Should the user have a bank account, this is simply a question of linking to a bank account. If the user however does not have an account, the process creates a bank account for her or creates a pseudo bank account, held by a third party or the user's mobile operator. It also allows user to convert cash in and out of the stored value account. If the account is linked to a bank account, then users can visit banks to cash-in and cash-out. Users can generally and much easily transfer funds between accounts linked to two mobile phones, by using a set of SMS messages (or menu commands) and PIN numbers (Donner *et al,* 2008).

The Mobile Phones offer a new way to move money from place to place and present an alternative to the payment systems offered by banks, remittance firms, pawn shops, etc. The uptake of m-banking/m-payments systems has been particularly strong in the Philippines, where three million customers use systems offered by mobile operators Smart and Globe (Infodev, 2006); in South Africa, where over 450,000 people use Wizzit (Ivatury & Pickens, 2006) or one of two other national systems (Porteous, 2007); and in Kenya, where nearly two million users registered with Safaricom M-PESA system within a year of its nationwide rollout (Ivatury & Mas, 2008; Vaughan, 2007).

2.5 Challenges Facing Mobile Phone Banking

There are several major challenges and issues facing mobile phone banking today. These include:

2.5.1 Perceived Risk

Security and trust remains the major factors influencing the establishment and use of new technologies for financial transactions (McKnight *et al* 2002). For the success of mobile phone banking, there is need for security of personal details and financial information. As a result, the lower the perception of risk involved in using mobile phone banking, the more likely that it will be adopted. Security has been a major concern in the telephone banking quarters (Feinman et al., 1999; Financial Services Security Lab Background,

2001). Customers are concerned of giving their bank account details via mobile for fear of the same being intercepted. Other potential threats include the issue of User authentication may be disabled, in default mode, divulging the contents of the device to anyone who possesses it. The operators have however tried to rectify this insisting on production of national identification cards before any operation.

2.5.2 Congestion

Congestion is another major challenge as far as mobile banking is concerned. This is especially very common during peak periods. Lots of people tend to carry out banking transactions through the mobile phone at the end of the month and during the evening and weekends thus causing congestion on the network.

2.5.3 Accessibility

Another major challenge faced by the users is the inaccessibility to the customer care from the various providers. This is especially so since the customer care centers are located only in major towns. This has locked out the rural populations from this very important personalized service by customer care representatives.

2.5.4 Interoperability

This is the technological design of the system and its functionality. Is the service tied to one mobile network operator or is it network-independent? A user would prefer to transact with anyone across all networks. This has been a major setback as users can also operate and transfer money within one network thereby locking people in other networks. This has particularly been very inconveniencing.

2.5.5 Tariff structures for consumers

This is the service charges format. Are customers charged account fees or fees per transaction? The user experience of the various mobile systems depends on how the service providers have positioned and priced the various services. There has however been a large pricing disparity with established and controlling operators charging a fairly high price.

2.5.6 Regulatory compliance

The operators are expected to comply with the regulation set by CCK, the telecommunications regulator. The question is the existing regulations governing all the operators. For example anti-money laundering AML tools might be applied only when transactions exceed specific limits in terms of both frequency and amount but what is applied to know your customer KYC?

2.5.7 Network related issues

This is still a big question that needs to be addressed. Lack of a vast coverage on the network will affect the use and adoption of the mobile phone banking. Areas especially in rural Kenya which are mostly unbanked and need the mobile banking do not have reliable network. In areas such as the northern part of the country, users have to travel long distances in search for reliable network.

2.5.8 Cash float unavailability

The issue of cash float has been a thorn in the MPESA agents' flesh. This is especially common in the rural areas. Users in certain areas are not allowed to withdraw any figure of more than a thousand shilling at a time. This is especially very inconveniencing to the small scale business people and the general populace at large. Local banks have recently come to the agent' rescue by providing loans towards cash float.

2.5.9 Self Efficacy

This construct refers to the confidence an individual has in their ability to use a specific technology. Donner et al (2000) further demonstrated the importance of self efficacy in their study of user behavior with information technology. As with Internet Banking it is expected that an individual who is confident in the skills required for mobile phone banking will be more likely to adopt it.

2.5.10 Social and Cultural Factors

Social and cultural influence encompasses social pressure exerted on the individual by the opinions of other people. Social influence is a component of the mobile phone

technology adoption and use model by Kwon and Chidambaram (2000). Culture is a learned behavior consisting of thoughts, feelings and actions (Venkatesh, Morris *et al* 2003), while Hall (1990) describes culture as communication through words, material things and behavior.

2.6 Theoretical Framework for Analyzing Mobile Phone Banking Adoption

2.6.1 Integrated Model Theory (IMT)

Mobile banking business has attracted many researchers with interest in tracking the dynamics and the potential of mobile phone technologies (Mallat et al., 2004). The research study on adoption of mobile banking by the informal sector players in Kenya will be closely guided by Integrated Model Theory (IMT). This is a derived model from the following sub models.

- Technology acceptance model (TAM)
- Theory of planned behavior (TPB)
- Diffusion of innovations (DOI)
- Decomposed theory of planned behavior (DTPB)
- Unified theory of acceptance and use of technology (UTAUT)

The models have gained popularity amongst researchers and technologists as the information systems expand with new innovations by the day. Mobile telephony is an important area of research in the Information Systems arena especially in the last 20 years (Davis et al., 1989).

This study integrates factors from these models and focuses on the adoption of mobile banking. The purpose of this research is to improve the understanding of mobile phone technology acceptance for banking. This is done looking at the variables of the mentioned models. Using the meaning of the respective variables, the factors will be picked by analyzing their acceptance. A questionnaire exploring the relevance of variables in the integrated model has been constructed from those items used in source models.

Technology acceptance model (TAM) by Nysveen et al (2005), focuses on attitudinal explanations of intention to use technology. It is known to be a widely used model in

information Technology systems field and considered to present an important model towards appreciation of the information systems (Davis et al., 1989). Five variables are used to define TAM, namely: usefulness, ease of use, attitude, behavioral intention and actual use. The model has been used widely in research and technological settings

Figure 2.2.Technology Acceptance Model (Davis et al., 1989)

Diffusion of Innovations (DOI) theory (Rogers, 1995) describes the process through which an individual makes the decision whether or not to adopt an innovation. Rogers refers to diffusion as a social change and defines it as the process by which an innovation is communicated among the members of a social system. Diffusion typically takes place over time with an initial slow growth period, followed by a rapid growth period, a gradual stabilization, and often a final decline. Importantly, the rate of adoption differs between different innovations. According to Azjen and Fishbein (1970), attitude is determined by a person's belief that behavior leads to a certain outcome and the person's evaluation of those outcome, whether favorable or unfavorable.

The Theory of Planned Behavior (TPB) (Ajzen, 1991) postulates three conceptually independent determinants of a behavioral intention which are attitude, subjective norm and perceived behavioral control. Subjective norm refers to a person's perceptions of what relevant others are likely to think about the behavior, as well as the extent to which the person wishes to comply with those relevant others. Relevant others refer to individuals or groups whose beliefs may be important to the person. Examples of relevant others are parents, siblings, friends and colleagues. Perceived behavioral control refers to a person's perception of how easy or difficult it is to engage in a particular behavior, which may depend on past experiences, second-hand information and anticipated assistance and impediments.

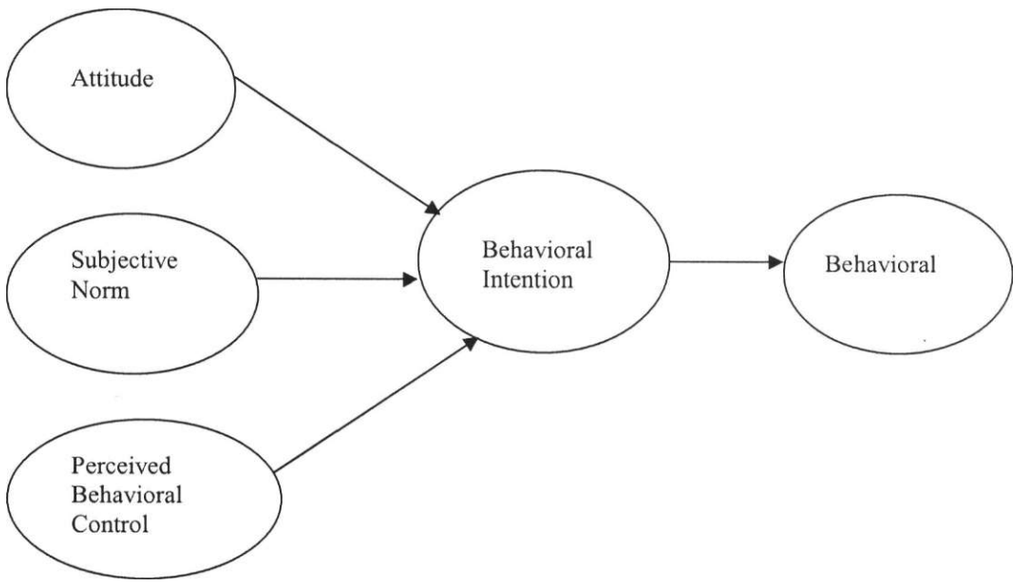


Figure 3.Theory of Planned Behavior (Ajzen, 1991)

The decomposed theory of planned behavior not only keep the theory of planned behavio

principles, but also add important value to the original theory, as it adds a bigger number of beliefs and constructs to the model (Venkatesh et al, 2007).

Mallat *et al* (2004) pose that the addition of new variables made in terms of the theories of adoption and diffusion of innovation and technology has contributed little to i ncrease the explanatory ability of these theoretical models. He proposed an integrated model that adds the theory of reasoned action, theory of planned behavior, technology acceptance model, decomposed theory of planned behavior and innovation diffusion theory to understand the diverse number of factors that might influence consumer attitude and intentions towards adopting mobile phone banking.

One of the more recent theories, the unified theory of acceptance and use of technology (UTAUT) by Venkatesh et al. UTAUT contains four core determinants of intention and usage-performance expectancy, effort expectancy, social influence and facilitating conditions. Performance expectancy is closely related to perceived usefulness, while effort expectancy reflects the perceived ease of use. Both usefulness and ease of use have been found as important factors in explaining technology acceptance. One of the

strengths of the UTAUT model is that it considers the role of several moderating variables, namely gender, age, experience and voluntaries of use provides a comprehensive framework for technology adoption analysis. The effect on familiarization of mobile phones can be seen as a special character of the facilitating condition. Also, the usage time and the technology use related skills could also be considered as facilitating conditions, as they both can be expected to influence the perceptions of individuals towards new technologies and technology related services.

Based on issues in previous sections, in this paper factors that affect adoption of Mobile Phone Banking as a New Model are presented in (figure 4). This model integrates Diffusion of innovations theory with decomposed theory. Also in the Proposed Model some conditions such as the usage time, familiarity of the mobile device, technology use skills, etc., that are based on UTAUT facilitate adoption of Mobile Banking.

2.6.2 Conceptual Framework

Factors that are considered to have a bearing on adoption of the mobile banking in Kenya have been assessed to determine their impact. See figure below for details.

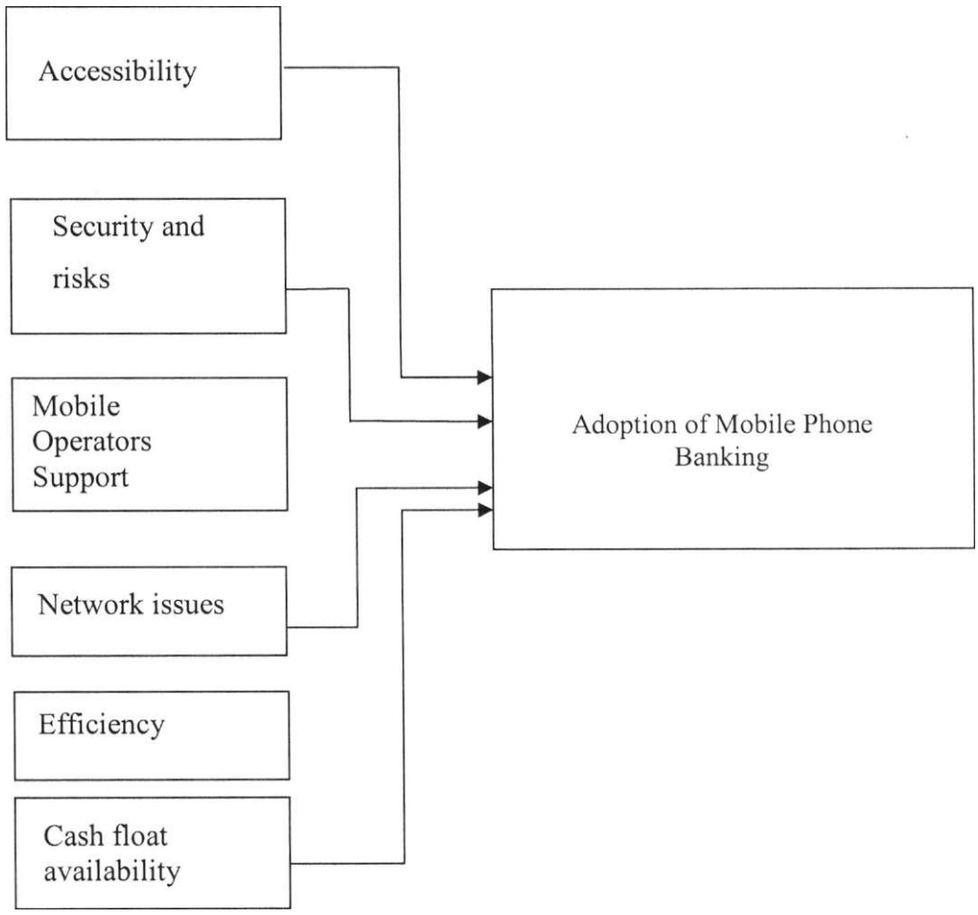


Figure 4: Conceptual Framework

Source: Own

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter outlines the overall methodology that was used to carry out this research study. The chapter describes the research design, population, sampling techniques, data collection methods, research procedures, and methodology that the researcher employed in the study.

3.2 Research Design

The research study was based on descriptive survey research designs because the study sorts to determine aspects of M-banking use and adoption among the informal sector in Nairobi. Descriptive surveys are suitable for gathering data whose intention is to describe the nature of the existing patterns; hence it was considered an efficient way of obtaining information that was needed to describe peoples' feelings and opinions.

3.3 Population

The target population for the study comprises of the businesses people operating under the informal sector in Nairobi CBD. The informal sector includes micro, small and medium enterprises in the CBD.

3.4 *Sample* and Sampling Procedure

According to Mugenda, *et a, I.* (2003) in descriptive studies a sample of 20 per cent of the population is acceptable. Samples of 25% were targeted to ensure a representative sample. This translated to approximately 100 respondents considering the estimated population of 400 persons under the informal sector business.

The table below shows the sub group's stratified proportionate representation in the sample. The sample units were randomly sampled from their subgroups with no particular emphasis to individual stratum business levels on assumption that all businesses are running with similar objectives.

Table 3.1 Sample Representation

Sub grouping	Target population	Sample size (25% of the population)
Micro	240	60
Small	120	30
Medium	40	10
Total	400	100

3.5 Instrument

The choice of a research instrument, according to Mwiria (1995) is determined by the nature of the study, the kind of data collected and the kind of target population (literacy level, ethical issues etc.). The researchers administer questionnaires as the instrument to collect data. The questionnaires have the advantage of providing information quickly and precisely. Questionnaires are suited to this study because the population involved is literate.

The 5-scale Likert type scale was adopted for the study.

3.6 Data Collection

Primary data was collected for the purpose of this study. It was collected using a self-administered questionnaire available in the appendix. Semi-structured questionnaire, having both open-ended and closed-ended question were used. The questionnaires were distributed to people running businesses in the informal sector business person within Nairobi CBD.

3.7 Data Analysis

The data collected through the survey questionnaires included both quantitative and qualitative data. Quantitative analysis was used to derive the information collected from questionnaires. Descriptive statistics were used to analyze the data by way of frequencies, percentages and proportions. Data in Section four of this study were analyzed using SPSS and presented using graphs and tables.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

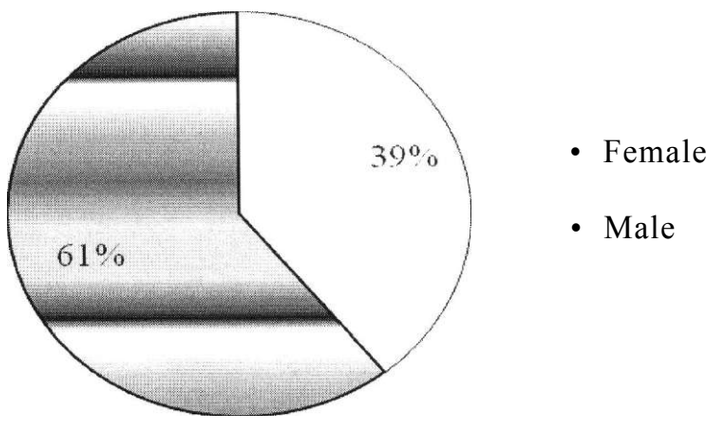
4.1 Introduction

The completed questionnaires were checked for correct entries, errors and general editing. They were then numbered and appropriate coding done before entering the data to a predesigned SPSS data base. The data was then analyzed and presented as outlined in this section.

4.2 Demographic characteristics of the respondents

The study sampled business players in the informal sector of varying ages, gender and education. Out of the 84 respondents majority were male (61.7%) and female were 39.3%.

Figure 4.1 Gender representation of the respondents



Source: Primary Data

The Study revealed that the informal sector is dominated by persons of ages between 26 and 30. Their population indicated that they represented about 39.3% of the business persons sampled. The other age groups had varying degrees of dominance which include persons of ages between 31-35 (35.7%), 36-40 (9.5%), 41-50 (4.8), and those above 50 and under 18 had a combined ration of 6.0% . Table 4.1 gives further illustration

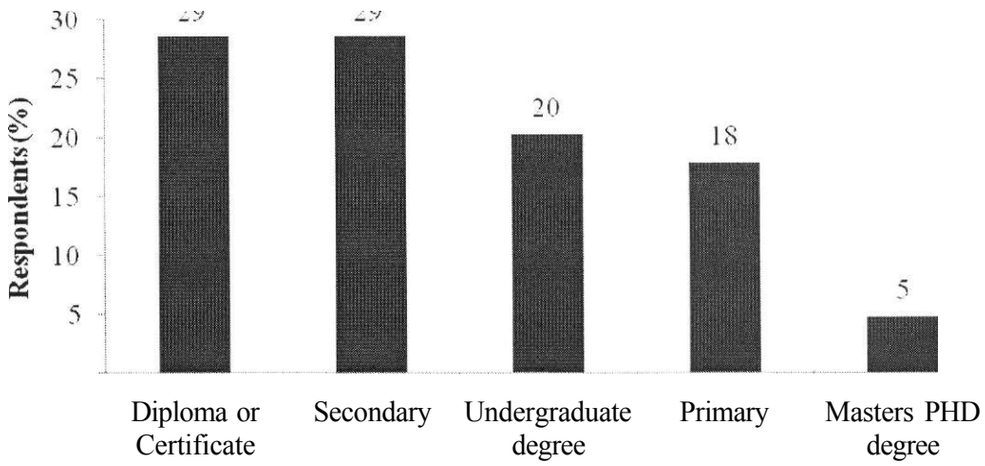
Table 4.1. Age groups of the persons in the informal sector

Age groups	Frequency	Valid Percent
Under 18	2	2.4
18-25	4	4.8
26-30	33	39.3
31-35	30	35.7
36-40	8	9.5
41-50	4	4.8
Over 50	3	3.6
Total	84	100.0

Source: Primary Data

The sector is dominated by fairly educated persons within the CBD with most of the persons being Diploma and certificate holders (28.6%). This was equal to those who have completed secondary school education (28.6%). The other educational levels revealed that those with primary level education comprised 17.9%. Undergratuate were 20.2% while those with education above masters degree were 4.8% (See chart below).

Figure 4.2 Respondents Education levels



Source :Primary Data

4.3 General Busines Information

The study revealed that there were many different types of businesses, each uniquely run by the owners and of different ages in business. The majority of the business owners indicated that they have been operating business for a period of between 2 and 4 years (33.3%). Others include; Period between 4-7 yrs (24.7%), Between 1-2 yrs (16.0%), less than one year (17.3%) and those with over 8 years in business were (8.6%).

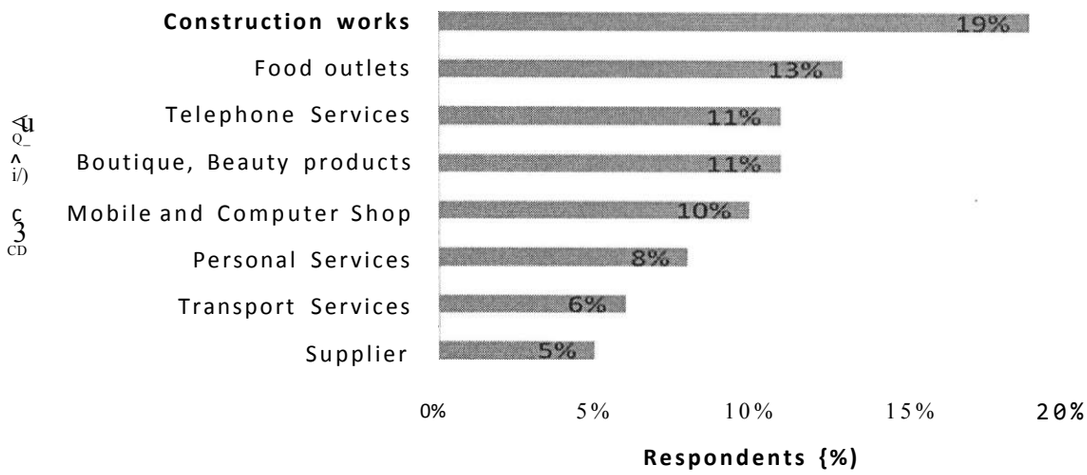
Table 4.2 Period of time in business

Period in business	Frequency	Valid Percent
Less than 1 year	14	17.3
Between 1 -2 years	13	16.0
Between 2-4 years	27	33.3
Between 4-7 years	20	24.7
over 8 years	7	8.6
Total	81	100.0
Missing System	3	
Total	84	

Source: Primary Data

On the business types being operated. The respondents were sampled from diffeerent levels of business category which included; clothing and body products (10.7%), Fast moving consumer goods shops and vendors (16.7%), Food outlets (14.3%) Computer and mobile shops (9.5%), Telephone and mobile services (10.7), Construction works (19.0%), personal services (8.3%), transport services (6.0%) and general suppliers comprises 4.8%. The bar graph below illustrates the details.

Figure 4.3 Informal sector types of business



Source: Primary Data

Those sampled, the vast majority indicated that they earn an annual income of over Kshs. 50,000 (81.0%). Those who earned between Kshs. 40,000 and Kshs. 50,000 were 16.7% while those within the bracket of between Kshs. 30,000 and 40,000 were 2.4%. None fell below Kshs. 30,000 income .

Table 4.3 Annual income

	Frequency	Percent	Valid Percent
Between Kshs. 30,000-40,000	2	2.4	2.4
Between Kshs 40,000-50,00	14	16.7	16.7
Above Kshs 50,000	68	81.0	81.0
Total	**84**	**100.0**	**100.0**

Source: Primary Data

4.4 Money transfer services amongst the informal sector businesses

The study revealed that the informal sector commonly uses the mobile banking transfer services as the main money mode. In a five scale rating of various money transfer services, the mobile banking service was rated highly at a mean of 4.48 points which

translates to 89.6%. The other commonly used modes were commercial banks (3.35 points), hand delivery (2.68 points). See table below for details.

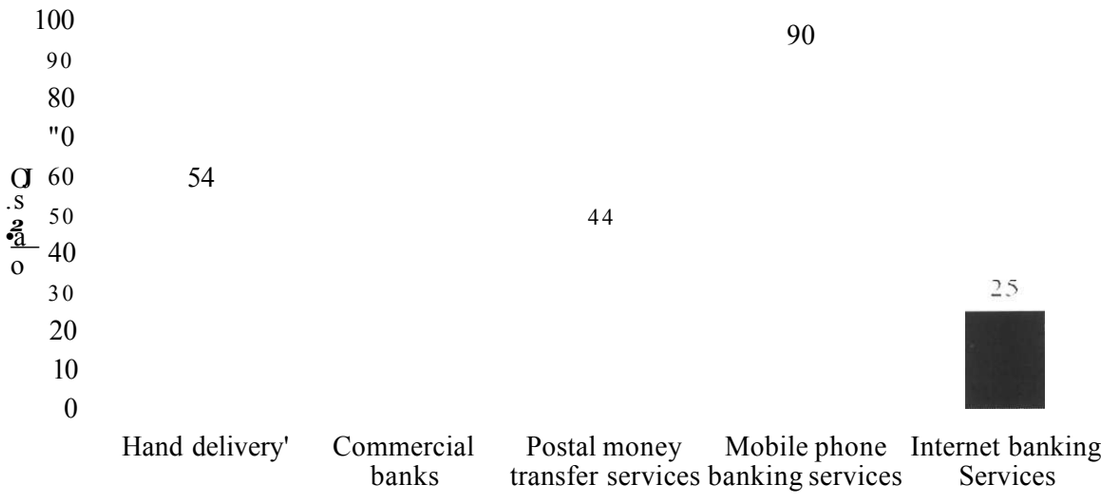
Table 4.4 Money transfer services rating

	Mean	Std. Deviation
Postal money transfer services	2.18	0.662
Internet banking	2.24	1.228
Hand delivery	*2.68*	0.996
Commercial bank	3.35	0.925
Mobile phone banking services	4.48	0.702

Source: Primary Data

The percentage rating can be presented as follows. This was obtained by multiplying the mean by 20 to convert to a percentage rating.

Figure 4.4 Money transfer ratings



Source: Primary Data

A cross tabulation of the rating of the mobile phone usage in money transfer, established that the higher the education of the respondents, the higher the usage of M-banking services. The table below illustrates.

Table 4.5 Mobile transfer ratings according to the education level

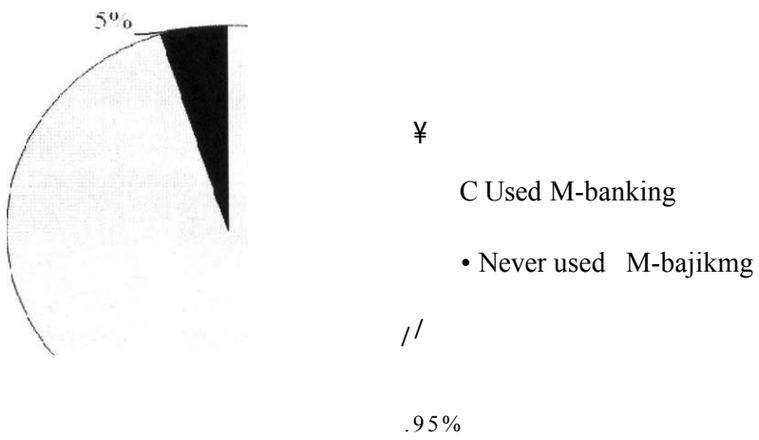
	Primary	Secondary	Diploma or Certificate	Undergraduate degree	Masters/PHD degree
More than once in a day	2	3	0	0	0
Weekly	8	11	8	5	0
Rarely Use	5	13	16	12	4
Never	0	0	0	0	0
Total	15	24	24	17	4

Source: Primary Data

4.5 M-phone banking usage

In general, it was indicative from the preceding section that mobile banking is most amongst the players in the informal sector. Most respondents indicated that they have used mobile phone banking services with over 95.2% of the respondents in agreement to the fact. A paltry 4.8% have never used a mobile phone to bank.

Figure 4.5 Business persons who have used M-banking

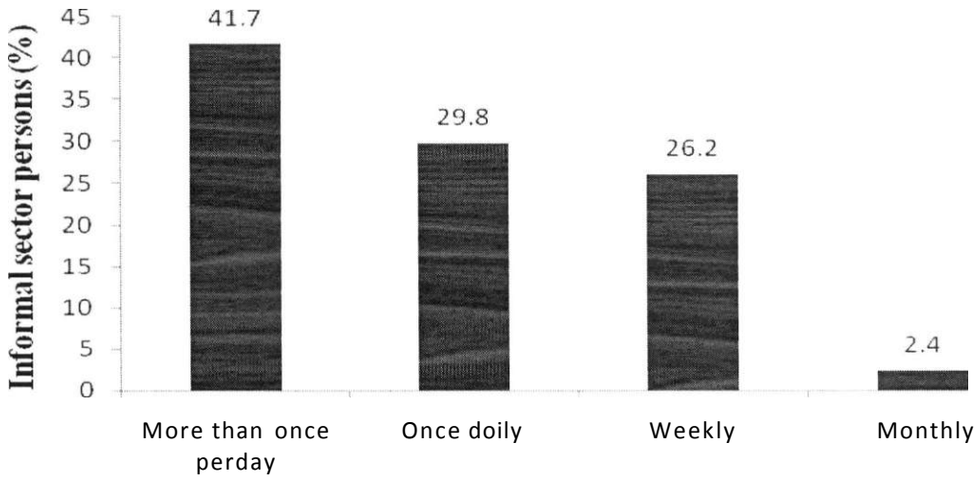


Source: Primary Data

On probing to determine frequency of usage, most respondents indicated that they use the M-banking services more than once per day (41.7%). The others have varying frequency

that include once daily (29.8%), once weekly (26.2%) and those who use it once per month were 2.4%.

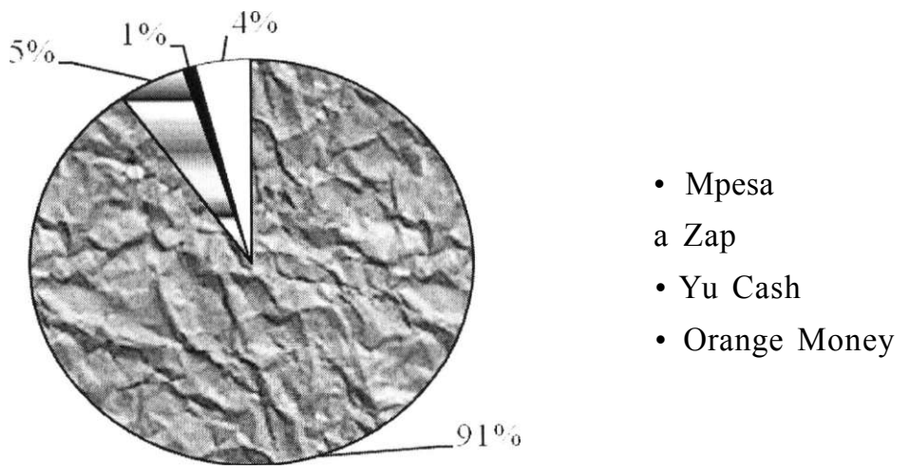
Figure 4.6 Frequency of M-banking usage among the informal sector persons



Source: Primary Data

The study revealed that Safaricom MPESA Mobile banking service is dominating the market, taking 91% of the mobile banking business amongst informal sector business persons. Airtel's Zap took about 5%, Orange money 4% and Yu Cash took the remaining 1%. See the pie chart below.

Figure 4.7 M-banking business volume distribution amongst the operators



4.6 M-banking Services

The wide ranging M-banking services have varying degree of usage. Buying of airtime evidently remains the most commonly used service. In a five point rating, the use of M-banking indicated usage was rated at 4.68 (mean) out of 5 points which translates to 93.6% rating. Other services were averagely rated as follows: Withdrawals (3.76/5), Paying a third party beneficiary (4.15/5) Bills payment (3.5/5) balance enquiry (3.56/5), Funds transfer to/from bank account (3.52/5) and viewing of mini statement was the most un-popular with average rating value of 2.24/5. Table 4.4 below gives more details including the median, mode, Standard deviation, variance, minimum and maximum value according the data collected.

Table 4.6 M-banking services usage ratings

M-banking Services	Mean	Std. Deviation
View mini statement	2.24	1.137
Transfer funds to bank account	3.52	1.035
balance enquiry	3.56	1.144
Withdrawals	3.76	1.048
pay bills	3.85	0.752
Pay third party beneficiary	4.15	0.638
Buy phone airtime	4.68	0.563

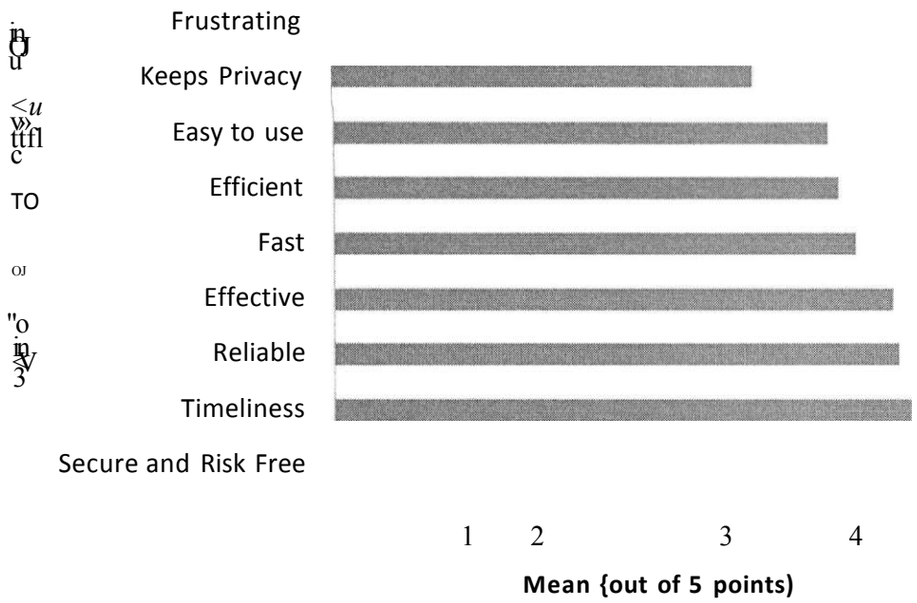
Source: Primary Data

4.7 M-banking suitability

M-banking is considerably receiving approval in many aspects when compared with the other conventional money transfer services that includes commercial banks, postal money transfer services and hand delivery among others. The study sampled various aspects a sort the opinion of the respondents in a five point rating that generally measured perception. The results of the mean and the mode of the tests indicated high rating for positive attributes of the M-banking services. Most respondents were of the opinion that the m-banking services are secure and risk giving an average rating of 4.46/5. Other attributes tested include reliability (4.33/5), timeliness (4.42/5), effective (4.29/5), easy to use (3.79/5), efficient (3.87/5). Suitability of service when it comes to keeping privacy, however receive a relatively low rating at 3.23/5. When tested if the service is frustrating,

most respondents rated lowly receiving an average 2.23/5 points. The mode and the median indicated similar trends.

Figure 4.8 Rating of merits of the M-banking



Source: Primary Data

Most respondents thought that the M-banking services could be more easily adopted if the service providers give more support to the users. A five point rating indicated that more support from the providers (mean=4.14/5) is most needed to enable the service to spread further. Activation (mean 4.03/5) of mobile phones for M-banking also receives substantial approval as a means of developing the service further. See the table below for details on approaches that could help more M-banking develop faster.

Table 4.7 Possible actions that could make mobile banking easier to use

	Mean	Std. Deviation
Support from provider	4.14	.729
Activated	4.03	.905
Using phone fit lifestyle	3.78	.654
Cell phone banking fits lifestyle	3.77	.784
Understand the process of cell phone banking fast	3.53	.804
Knew how to use it to bank	2.87	.882
Test cell phone banking first	2.54	1.152

Source: Primary Data

4.8 Factor contributing to adoption of Mobile banking

Mobile banking has achieved tremendous growth in Kenya since it came in to being for various reasons which has promoted its penetration into the market. The respondents to the study had varying opinions which include the product accessibility.

Accessibility was particularly mentioned by more than 25% of the respondents as the main reason why M-banking has succeeded in the market within a very short time. The other factors which prominently featured include; improved technology (13%), ease of use to learn and use (13%), and publicity from the network providers (12%), Ability to use it in paying bills (11%) Affordability (10%). Also mentioned were; fast to use, allows for accountability, and secure to use which also got mentioned by less than 10% of the respondents.

Table 4.8 Factor contributing of M-Banking

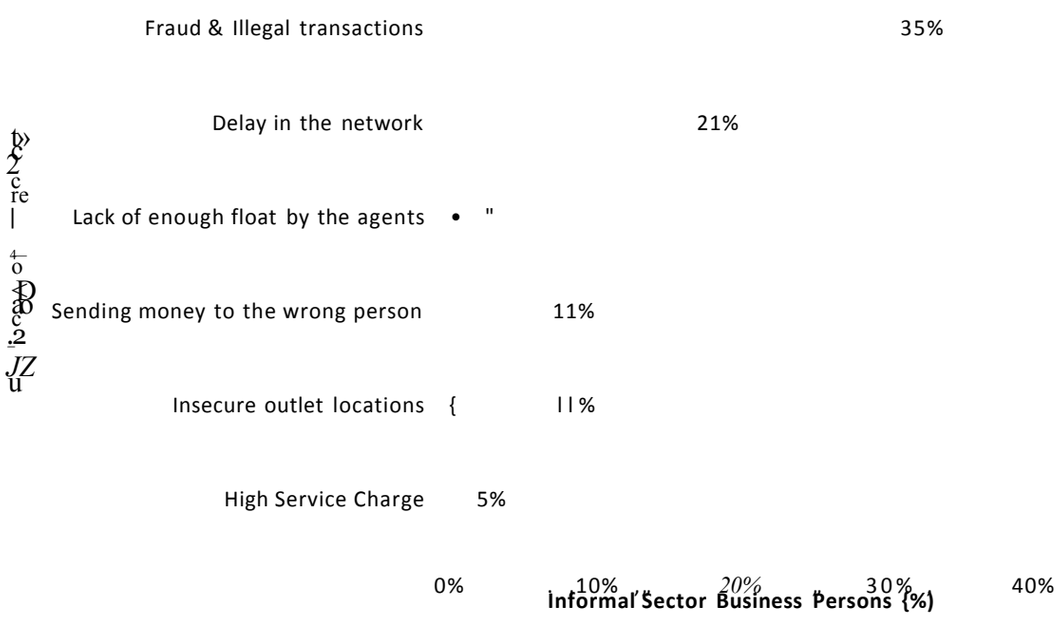
	Frequency	Percentage
Accessible	21	25.0
Well publicized	10	11.9
Improved technology	11	13.1
Easy to use and learn	11	13.1
Bills payment	9	10.7
Affordable	8	9.5
Language used	4	4.8
Accountability	4	4.8
Fast	3	3.6
Secure	3	3.6
Total	84	100.0

Source:Primary Data

4.9 Overcoming challenges of M-banking

The study identified various reasons which contribute to the shortcoming of M-banking in Kenya. Fraud and illegal transactions were rated highly by the respondents. Thirty five percent (35%) of the respondents mentioned fraud as the main challenge followed by delays in the network (21%). Other challenges include: lack of enough float (18%) sending money to the wrong agents (11%), insecure outlet locations (11%) and there were those respondents who thought that the service charges were too high (5%).

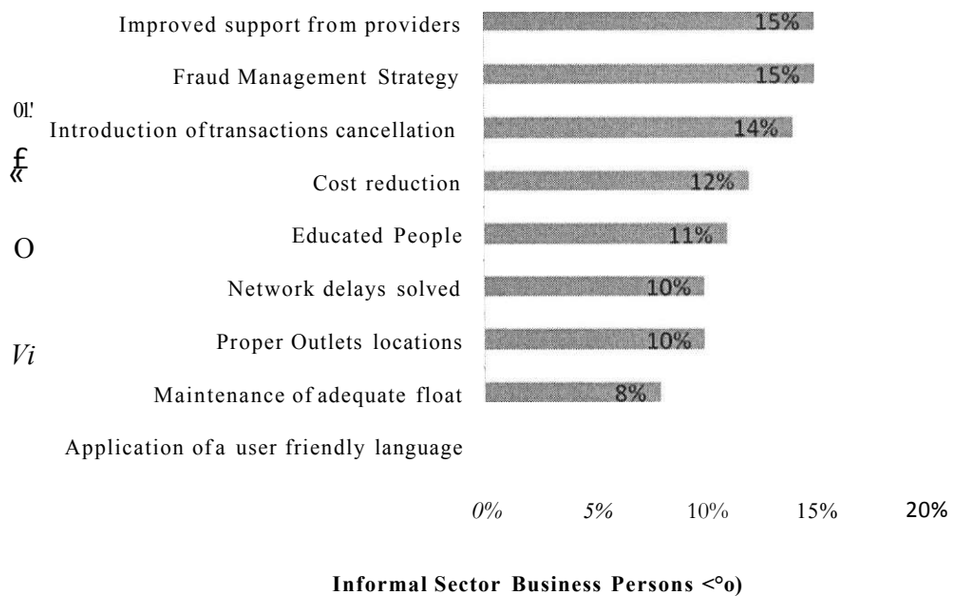
Figure 4.9 Challenges of M-banking



Source : Primary Data

Overcoming challenges is a necessity to ensure that both the telecommunications and banking industries achieve the much needed growth. As such, the respondents had a number of suggestions as a possible solution to the challenges in the M-banking services. Fraud management and improved support from providers were equally mentioned by most respondents as the main solution to the challenges facing M-banking in Kenya with both supported by each 16% of the respondents. Introduction of a way to cancel a transaction incase of missed recipient number was mentioned by 14% of the respondents. This was followed by reduction in service charge (12%), Educating the people about the M-banking (11%) better location of outlets (10%) and eradicating network delays (10%). Maitaining an adequate float and use of a friendly language was observed by 8% and 5% respectively. The bar graph below illustrates further.

Figure 4.10 Solutions to overcome M-banking challenges



Source : Primary Data

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section contains the summary, conclusions and recommendations based on the findings of the study. It also contains information on proposed areas that require farther research. The study generally draws its conclusion and recommendations based on data captured through the use of questionnaires and subsequent analysis presented in the preceding section.

5.2 Summary

From this research it was discovered that the adoption of mobile phone banking in the informal sector is influenced by multiple determinants, which are in themselves considered to be multiple constructs. Specifically, the research showed that there were more male users of mobile phone banking than female 61% and 39 % respectively.4.48 % of the informal sector used the mobile phone banking more compared to the other money transfer services whereas the least used services was the postal money transfer services. Respondents whose education level was Secondary certificate and diploma had the highest number of mobile phone banking users with a tie of 24 each followed by Undergraduate degree with 17 respondents. Safaricom dominates the mobile phone banking market with a share of 91% and the latest entrant YU cash controls 1% of the market share.

Most respondents found Mobile Phone Banking to be more suitable due to most importantly its timeliness, frustration when using M-banking rated lowly.

The study also identified that 35% of the respondents had challenges using Mobile Phone Banking due to fraud related incidents, followed by network related problems with 21% of the respondents and the least of them 5% mentioned pricing.

From the literature review as presented in the study, several variances and similarities can be drawn in comparison to the adopted framework. According to Nysveen et al (2005) in Technology Acceptance Model, intention to use technology highly depends on the attitude as opposed to the conceptual framework used in this study. Diffusion of Innovation theory contends that Adoption is by diffusion through communication through the social systems. Unlike the theory applied in this study where factors such as accessibility, Security, Mobile Operator Support, Network Issues, Cash Float availability among other factors.

5.3 Conclusion

Mobile Banking remains on top of the market as far as money transfer business is concerned. The study reveals massive business take-over of money transfer services from the traditional modes of money transfer that includes postal money transfer, commercial banks and hand deliveries among others.

In a measure of degree of preference, M-banking is the best option for most business persons in the informal sector with upto 90% preference rating as compared to other modes which are rated way less. Postal and Commercial banks which used to dominate the money transfer business few years ago are rated at 4% and 6% on the preference rating according to the members of the informal business sector.

The massive adoption of M-banking rides on a number of factors that has a major bearing on technological advancement and accessibility. The fact that millions of people are having mobile phones and cut across all economic classes is considered the main reason to why mobile banking is a big success. M-banking, a young innovative mode is here to stay and is projected to even further dominate the financial service industry with new technological innovation by the day.

The M-banking business however, just like any other business is facing its share of short comings. These include; fraud and illegal transactions which certainly seem to be one major challenge. Mobile service providers' network delays were also identified as

another matter of concern by most respondents. The other factors of concern were inadequate float with the agents, sending money to the wrong recipients, high service charge and some outlets were considered insecure.

5.3 Recommendations

Following the study, various recommendations can be made. It is quite notable that the M-banking service has transformed the way money is transferred and that the concept is generally accepted considering its current usage. The idea requires more vivid studies be conducted to determine the adoption challenges by the informal sector. There is need to link the M-banking services to small and medium enterprises with a view of enhancing business efficiency through more aggressive publicity and education to the market players. This is expected to considerably contribute to the growth in the overall economy considering that the sector plays a significant role in employment creation.

There is need for the mobile phone service providers to boost their capacities to reach more people who may need the M-banking services especially in the informal sector. Unnecessary delays should be eradicated to allow for efficiency and effectiveness. More secure outlets should be increased to reduce the issues related to insufficient float and security. There is need for more surveillance and monitoring for fraud which is becoming rampant and has made many lose their monies. On sending money to the wrong recipient, the providers should identify a way of cancelling a transaction by the senders immediately they notice an erroneous money transfer. One should be able to do it without going through the provider which is often engaged or delays before effecting the cancellation.

If the outlet performs too many cash-in transactions it will eventually run out of e-float, and if it performs too many cash out transactions it will run out of cash. In either case, the retailer will need to rebalance its liquidity: convert the excess e-float into cash, or vice versa. For that, they must go to the next rung up the cash distribution hierarchy.
Telecommunication Service providers only buy and sell e-float from a select range of distributors (agents) and banks (super-agents) with which they have signed an agency

agreement. To buy (sell) e-float these agents must deposit (collect) the appropriate amount of money in (from) the service providers' account at either of its custodian banks (CBA or SCB) in the case of Safaricom. Because of how the M-PESA system is set up and how interbank payments work in Kenya, it can take one or two days for such transactions to settle. Thus, the agent needs to have a sufficient balance of e-float to accommodate the potential liquidity needs of their stores for up to two days. This imposes a high working capital requirement cost on agents. The service providers should make the process faster.

There is need for Mobile Phone Banking service providers to link up with Banks and other institutional partners to offer a fuller range of financial products.

The business people may want more privacy in their savings behavior than an agent provides.

5.4 Limitations for study

The anticipated threats to validity in this study will be as follows:

1) Intervening or confounding variables which were beyond the researchers control such as honesty of the respondents and personal biases. To minimize such conditions, the researcher requested the respondents to be as honest as possible and to be impartial when answering the questionnaires.
2) The research environments are classified as uncontrolled settings where extraneous variables may influence on the data gathered such as comments from other respondents, anxiety, stress, motivation on the part of the respondents while on the process of answering the questionnaires. Although these were beyond the researcher's control, efforts were made to curb it by requesting the respondents to be as objective as possible in answering the questionnaires.
3) The use of research assistants could have been a source of inconsistencies such as differences in conditions and time when the data were obtained from respondents. These were minimized by orienting and briefing the research assistants on the data gathering procedures.

5.5 Suggestions for further study

1. Study to determine other viable mobile phone applications that could promote efficiency of the informal sector.
2. A study to determine the viability traditional money transfer services and their sustainability in the modern world.
3. The role of government agencies in promoting cost effective money transfers in the economy.

REFERENCES

Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Science, 28(3),* 557-582.

Ajzen, I. (1985). *From intentions to actions: A theory of planned behavior* (J. Kuhl & J. Beckman (Eds.).). Heidelberg: Springer: Action-control: From cognition to behavior.

Ajzen, I., & Fishbein, M. (1969). The Prediction of Behavioral Intentions in a Choice Situation. *Journal of Experimental Social Psychology,* 5.

Ajzen, I., & Fishbein, M. (1970). The Prediction of Behavior from Attitudinal and Normative Variables. *Journal of Experimental Social Psychology*, 6.

Ajzen, Icek. (1991). The Theory of Planned Behaviour. *Organizational Behavior and Human Decision Processes, 50(5).*

Allen, B. (2003). *Processing Cost per Transaction.* New York: Booz Allen.

Amenya, G. N. (2007). *The informal sector in Kenya.* Nairobi.

Armitage, C. J., & Conner, M. (2001). Efficacy of the Theory of Planned Behavior: A Meta-analytic review. *British Journal of Social Psychology*, 50.

Aw, W. Y. (2009). Factors that Affect Mobile Telephone Users to Use Mobile Payment Solution Int. *Journal of Economics and Management*, 3(1), 37-49.

Barnes, S. J., & Corbitt, B. (2003). Mobile Banking: concept and potential. *International Journal of Mobile Communications*, 7(3), 273-288.

Birch, G. W. (1999). Mobile financial servicesthe internet isn't the only digital channel to consumers. Retrieved from http://www.arraydev.com/commerce/JIBC/99 09-

05.htm

Booz, A. (2003). *Processing Cost per Transaction.* New York: Booz Allen.

Brown, I. (2003). International Journal of Information Management, *23,* 381-394.

Cellular Online. (2002). Statistics of cell in South Africa. Retrieved from http://www.cellular.co.za/stats/statistics_south_africa.htm

Center for History and New Media, (n.d.-a). Zotero Quick Start Guide. Retrieved a from http://zotero.org/support/quick_start_guide

Center for History and New Media, (n.d.-b). Zotero Quick Start Guide. Retrieved b from http://zotero.org/support/quickstartguide

Chete, L. N., & Egwaikhide. (2007). African Economic Research Consortium.

Davis, F. (1985). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 5(35).

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of twotheoretical models. *Management Science,* (35), 982-1003.

Davis, F., & et al. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science,* 35(8).

Davis, F., & Venkatesh, V. (1995). Measuring User Acceptance of Emerging Information Technologies:An Assessment of Possible Method Biases.

DFID. (2005). *Banking in Kenya Report.* Retrieved from http://www.dfid.gov.uk/Documents/publicationsl/evaluation/agriculture-policy05-ev672.pdf

DFID. (2006a). *The Enabling Environment for Cell Phone Banking in Africa.*

DFID. (2006b). *The Enabling Environment for Mobile Banking in Africa. " Boston:BankableFrontiers.* Retrieved from http://www.bankablefrontier.eom/assets/ee.mobil.banking.report.v3.l.pdf

Donner, J., & Tellez, C. (2008). Mobile banking and economic development:Linking adoption,impact, and use. *Asian Journal of Communication, 18(4),* 318-322.

Feinman, & et al. (1999). *Security Basics: A Whitepaper.* Retrieved from http:/ /www .pwc.com

Feinman, T., & et al. (1999). Security Basics: A Whitepaper. Retrieved from http://www .pwc.com

Frost, & Sullivan. (2008). Customer & Market- Facing Marketing Research for Profitable Growth. Marketing Research.

FSD Kenya. (2008). *Research on Mobile Payments Experience: Results of the 2007 Survey.*

Garcia, R. N. (2009). *Global Competitiveness Report.* Geneva Switzerland.

Gautam, I. (2008). The Early Experience with Branchless Banking (p. 46). Washington, D.C.

Gibson, N. (2007, October 12). *The informal sector in Kenya.* University of Nairobi.

Goldfinger, C. (2002). Internet banking update. Retrieved from http://afrinet.internet.mu/competition/competiton/team06/ecommerce.banking.hm

GSM Association. (2006). *GSM Hits Two Billion Milestones.* London: GSM Association.

Hall, E. T., & Hall, M. R. (1990). *Understanding Cultural Differences.* Yarmouth, Me: Intercultural Press Inc.

Hyuha, M., Ndanshau, 0., & Kipokola, J. P. (n.d.). *Scope, Structure and Policy*

Implications of informal Financial Markets in Tanzania (Research Paper 18). Tanzania.

Ignacio, M., & Kabir, K. (2008, June). Banking on Mobiles: Why,How,for Whom? CGAP.

Ignacio, M., & Siedek, H. (2008). Banking through Networks of Retail Agents. CGAP.

Infodev. (2006). Micro-payments Systems and theirApplication to Mobile Networks. Retrieved from http://www.infodev.org/en/Publication.43.html

International Business Machine Corporation. (2007). *Global Innovation Outlook Report.*

Ivatury, Gautam, & Mas, I. (2006). The Early Experience with Branchless Banking. Focus Note 46.

Juniper Research. (2009). *Mobile Banking Strategies: Applications, Opportunities & Markets 2010-2015.*

Karjaluoto, H. (2002). *Electronic Banking in Finland: Consumers Beliefs, Attitudes,Intentions and Behaviors* (Unpublished Doctorial dissertation). University of Jyvaskyla, Jyvaskyla.

Kimani, F. (2007). *Competitive strategies used by small scale information Telecommunication firms in Nairobi* (Unpublished MBA project). University of Nairobi, Nairobi.

Kinyua, W. (2004). Reforms for enhanced performanceof kenya's financial sector. Nairobi African Centre for Economic Growth.

Koivu, T. (2002). Do efficient banking sectors accelerate economic growth in transition countries? Bank of Finland Institute for Economies in Transition.

Krugel, G. (2007). Mobile Banking Technology Options. FinMark Trust. Retrieved from

http://216.239.213.7/mmt/downloads/finmark_mbt aug 07.pdf

Kwon, H. S., & Chidambaram, L. (2000). A test of the technology Acceptance model:The case of cellular telephone adoption (Vol. 1, pp. 1-10).

Mallat, N. (2004, May). Mobile banking services. Commun, *47(5),* 43-45.

McKnight, D. H., Chaudhary, V., & Kacmar, C. (n.d.). The Impact of Initial consumer Trust on intentions to transact with a web site:A trust building model. *Journal of Strategic Information Systems, 11,* 297-323.

Mugenda, O. M., & Mugenda, A. G. (2003). *Research Methods: Quantitative and Qualitative Approaches.* Nairobi: ACTS Press.

Nyangasi. (2008, July 9). An Integrating Technology in Kenya. *African Executive.*

Pan, H. (2007). The Mobile Internet Newsletter. *Information Gatekeepers Inc.*

Pousttchi, K, & Schurig, M. (2004). Assessment of today's Mobile Banking applications from the view of customer requirements. Big Island, Hawaii.

Scornavacca, E., & Barnes, S. J. (2004). M-banking services in Japan: a strategic perspective. *International Journal of Mobile Communications,* 2(1), 51-66.

Siau, K, Lim, E.-P., & Shen, Z. (2001). Mobile Commerce: Promises, Challenges and Research Agenda. *Journal of Database Management, 12(3).*

Smith, P. (1994). Assessing the Size of the Underground Economy:The Canadian statistical Perspective. *Canadian Economic Observer*, 7(5), 16-33.

Tan, M., & Teo, T. (2000). Factors Influencing the adoption of Internet Banking. *Journal of the Association for Information Systems, 1(5),* 1-42.

World Bank. (2006). *Kenya inside Informality: poverty, jobs, housing and services in Nairobi's slums (* No. 36347-KE).

APPENDICES

Appendix ONE:

Letter to the Respondents

UNIVERSITY OF NAIROBI

SCHOOL OF BUSINESS

Telephone: +2542-318262
Telegrams: "Varsity", Nairobi
Telex: 22095 Varsity

P.O. Box 30197
Nairobi, Kenya

Dear Respondent,

I am a postgraduate student in the University Of Nairobi School Of Business. I'm conducting a research on the mobile phone banking adoption in the informal sector in Nairobi. This is in partial fulfillment of the requirement for the Masters of Business Administration Degree.

Kindly fill the attached questionnaire to the best of your knowledge. The information given will be used purely for academic purposes and will be treated with strict confidence. A copy of the final report will be availed to you on request.

Your assistance will be highly appreciated. Thank you.

Yours faithfully

Elizabeth Kahura
MBA Student

Mulwa
Supervisor

Questionnaire

1. Age group:
   - Under 18 ●
   - 18-25 ●
   - 26-30 ●
   - 31-35 ●
   - 36-40 ●
   - 41-50 ●
   - 51 + ●

   - Male ●
   - Female ●

3. Highest level of education: (Please mark the highest level reached)
   - Primary Level (KCPE) •
   - Secondary School level ('A' or 'O' level) •
   - Diploma or Certificate (Intermediate College) I I
   - Undergraduate Degree I I
   - Masters/PHD Degrees O

4. Type of Jua Kali Business Industry: (Please mark all that apply)
   - Farming Q
   - Masonry I I
   - Carpentry O
   - Groceries I I
   - Supermarket I I
   - Others

5. How long (Years) have you been in business?
   - Less than 1
   - Between 1-2
   - Between 2-4 •
   - Between 4-7 •
   - Over 10 •

6. Income bracket (per annum, before tax):

Ksh0-Ksh30000 •
Ksh31000- Ksh40000 •
Ksh41000- Ksh50000 •
Above 50000 •

7. What means do you often use to transfer money? (Rate degree of usage appropriately using the scale provided)

Mode	Never=l	rarely = 2	Sometimes=3	often=4	Very often =5
i) Hand Delivery					
ii) Commercial banks					
iii) Postal money transfer services					
iv) Mobile phone banking					
v) Internet banking					
vi) Others					

8. Ever done banking using a cell phone?
Yes • No • Unsure •
9. If no, would you ever bank using a cell phone?
Yes • No • Unsure •
10. How often do you use mobile phones to transfer money?
More than once in a day Q
Once Daily Q
Weekly •
Monthly •
Rarely use Q
Never O
11. Which Mobile banking service do you often use?
M-PESA •
YU Cash •
Orange Money Q
Zap •

12. Which services would you use if you did cell phone banking? (Rate degree of usage appropriately using the scale provided)

Mode	Never= 1	rarely = 2	Sometimes =3	often= 4	Very often =5

i) Bank account withdrawals					
ii) Paying bill					
iii) Balance enquiry					
iv) View mini-statements					
v) P ay third party b enefi ci ari es					
vi) Transfer funds to bank accounts					
vii) Buying Airtime					
viii) Others					
ix)					
x)					

13. Is your mobile phone activated for mobile banking?

Yes • No • Unsure •

14. If yes in the above question, for how long have you been using mobile phone banking services?. . . . . months

15. Please respond to the questions below to the best of your knowledge (tick the appropriate box)

Statement about Mobile phone banking services as compared to other conventional banking services

	Strongly Disagree	**Disagree**	**Indifferent**	**Agree**	**Strongly agree**
Secure and risky free					
Reliable					
Fast					
Easy to use					
Frustrating					
Keeps Private					
Efficient					
Effective					
Timeliness					
Use of mobile banking by your partners and business associates					

I would use or be more likely to use cell phone banking if:

i) My cell phone was activated for M-banking

ii) There was substantial support from the service providers.

iii) Using my cell phone to conduct banking transactions fits into my working style.

iv) Cell phone banking was compatible with

my lifestyle.					
I could test cell phone banking first.					
v) I could use it on a trial basis first to see what it can offer.					
vi) I could see a trial demo first.					
vii) I knew how to bank using a cell phone.					
viii) I could easily understand the process of cell phone banking.					
ix) I could learn the process of cell phone banking easily.					

16. State and explain other factors that contribute to the adoption of Mobile Phone banking

17. What are the challenges facing Mobile Phone banking amongst the informal sector in Kenya?

i)

ii)

iii)

iv)

18. What are possible solutions to the challenges facing the adaptation of the mobile banking in Kenya?

i)

ii)

hi)