

**EFFECT OF MOBILE TECHNOLOGY ON FINANCIAL INCLUSION IN KITUI
COUNTY, KENYA**

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DECLARATION

STUDENT’S DECLARATION

This work is my original work and has not been presented for a degree in any other university:

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DEDICATION

This work is dedicated to my beloved daughter Victoria Keli and also the County Government of Kitui as a whole.

ABSTRACT

Only 14% of Kitui County residents has secondary level education and above and is working for pay. Majority of the work force population is engaged in SMEs where they generate income to sustain their daily needs. Achieving financial inclusion will allow low income people to access financial services and their business will blossom. This study analyses in depth the effect of mobile phone technology on financial inclusion in Kitui County, Kenya. This study was guided by four objectives which includes: examining the effects of access to mobile phone on financial inclusion in Kitui county, Kenya, determining the effect of financial products offered through mobile phone technology on financial inclusion in Kitui county, assessing the effect of quality mobile phone services on financial inclusion in Kitui county, Kenya and finally assessing the effect of freedom to choose mobile network operator on financial inclusion in Kitui county, Kenya. The study adopted systematic research design. This study targeted a population of 7060 individual residents of

major towns of Kitui County. The target population included clients of Mpesa agents, petrol stations, supermarkets and mobile banking agents. The study used stratified sampling technique to select a sample of 351. The research used a researcher administered questionnaire to collect data. Data was analysed descriptively using SPSS and presented in form of tables, graphs and figures. Correlation analysis was run to check for interdependence among the factors. Finally, a univariate and multivariate regression analysis was conducted to estimate the relationship. The determination coefficient as measured by the adjusted R-squared presents was 91.4% which shown a strong relationship between dependent and independent. The study revealed that there is a positive impact between financial inclusion and mobile phone technology used. The mobile operators reported generating high revenues from mobile money transfers which was fueled by a high number of consumers moving money in their bank account using their mobile phones. Further the Ease of access to mobile services network has been a key contributor to the enhancing smooth service delivery in financial inclusion. Finally, the study recommends that policy makers should consider mobile technologies in their formulation of policies because despite negligible relationship between mobile technology and financial inclusion, the impact could be pronounced if much change is recorded in technological developments and more customers adopt mobile banking services.

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OPERATIONAL DEFINITION OF TERMS

Cell phone banking: Carrying out banking transactions and other related transactions by use of a cellphone either through menu driven or SMS technology.

Financial Inclusion: According to Demirguc (2008) financial inclusion or broad access to financial services is defined as an absence of price and non-price barriers in the use of financial services.

Access: refers to the level of penetration of the financial system through appropriate infrastructure for each type of population group, determined by the points of contact between people and institutions (channels) (AFI, 2010).

Branchless Banking: The delivery of financial services outside conventional bank branches through the use of retail agents and information and communications technologies, such as mobile phones, to transmit transaction details (AFI, 2010)..

Mobile Banking: The subset of electronic banking (e-banking) where funds are accessed and financial transactions like balance enquiries, transfers, payments are conducted through a mobile phone (AFI, 2010).

Mobile payments: Payments conducted via the mobile phone without the interaction with a store of value like a bank account, however sometimes mobile payments are conducted using a store of value (AFI, 2010).

LIST OF ABBREVIATIONS

AFI	Alliance for financial inclusion
ATMS	Automated Teller Machines
CBA	Commercial Bank of Africa
CBK	Central Bank of Kenya
CGAP	Consultative Group to Assist
IEG	Independent Evaluation Group
KCB	Kenya commercial Bank
KNBS	Kenya National Bureau of Statistics
UN	United Nations
MFI's	Micro finance Institutions
MPESA	Mobile money, an e-money transfers system pioneered by Safaricom, Kenya largest mobile service provider
PDA	Personal Digital Assistant
PEAU	Perceived Ease of Use
SMS	Short Message Service
TAM	Technology acceptance Mode

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter contains the overview effect of mobile technology on financial inclusion in Kitui County, Kenya. The chapter also highlighted the research problem which identified the gap that the study sought to address. In addition, the chapter provided the rationale of the study, significance of the study, scope of the study, limitations and delimitations of the study and assumptions of the study.

1.2 Background to the Study

The United Nations report (2006) played a significant role in bringing international attention on the issue of financial inclusion. The UN report defines an inclusive financial system as one that provides credit to all bankable individuals and firms; insurance to all insurable individuals and firms; and savings and payment services for everyone. It is commonly argued that the economy as a whole benefits through financial inclusion (Mohan, 2006). First, it could be an important tool to reduce income inequality in the economy. Low-income individuals are often those not accessing financial services. Once access is provided, these individuals have greater potential to improve their income levels (World Bank, 2012). The objective of achieving universal financial access by 2020, expressed by the president of the World Bank, is another attempt to recognize the important role of financial inclusion for economic growth and alleviation of poverty (Honohan, 2008).

Global Partnership for Financial Inclusion (2012) provides four key things about financial inclusion. First, financial inclusion encompasses four basic financial services: savings, payment, credit, and insurance. Second, these services should be designed in a manner accessible to traditionally excluded groups, including to the poor, women,

minority groups and those difficult to reach, for example, those who live in informal settlements. Third, provision of these services ought to meet adequate levels of quality, that is, should be affordable, available, and stable and follow minimum standards of consumer protection.

1.2.1 Financial Inclusion in Africa

The low level of financial inclusion in Africa is a reflection of both demand- and supply-side constraints (Faye & Triki, 2013). These include the underdevelopment of existing financial systems, lack of credit reporting institutions, poor levels of financial literacy and limited capacity of enterprises. The ability of Africans to access financial services is also hindered by poor quality of infrastructure and the small scale of many African economies (Faye & Triki, 2013). These constraints depict a large share of African population as commercially non-viable clients for formal financial institutions. Interestingly, over the last years, innovative use of information and communications technologies are making it inexpensive to process a large volume of small transactions and to deliver a wide range of financial services in areas where physical infrastructure is lacking. With over 640 million mobile phone subscribers in 2012, Africa has become the second most connected region in the world in terms of mobile subscriptions count, right after the Asia-Pacific region. The number of mobile subscribers as well as the penetration rate for mobile phones grew more than fourfold in Africa over the period 2005-2012 (GSMA, 2011). Nigeria counts the largest number of subscriptions, with 140 million subscribers. Egypt and South Africa follow suit with respectively 78.3 and 50.5 million subscriptions by end-2011. According to the GSM Association (GSMA, 2011), 25 African countries have penetration rates that exceed 90%. Africa is currently leading the trend of mobile financial services with over 56 deployments in place. Notably, Sub-Saharan Africa alone accounts for over 45% of the world's total mobile money deployments.

1.2.2 Financial Inclusion in Kenya

In a survey conducted by Fin Access in Kenya in 2009, income-related issues such as a lack of income, irregular income and the inability to pay for formal financial services accounted for most of the income-related challenges that resulted in financial exclusion. Access barriers such as a lack of proper documentation, complex financial products and services, illiteracy and the location of financial institutions were the main reasons why Kenyans were unable to use formal financial institutions.

In 2007, Kenya's largest mobile network operator (MNO), Safaricom, launched a mobile phone money transfer mechanism originally developed to enable microfinance borrowers to receive and send money using a network of Safaricom airtime resellers. M-Pesa is often cited as the pioneer of mobile financial services in Africa. It is currently the leading mobile money service in Kenya, accounting for more than 27,000 agents who handle over 30 million transactions daily. In Kenya 19% of airtime sold was purchased using M-Pesa (Faye & Triki, 2013).

According to the World Bank (2013), new potential for mobile money has come with the rise of interest-earning bank-integrated mobile savings systems, beginning with the launch of the M-KESHO system in March 2010. According to FinAccess (2013), 66.7% of adults accessed financial services through various financial providers. It showed that 11.5 million people accessed financial services through their mobile phones, while 5.4 million used banks. Through a partnership with CBA Bank in 2014, M-Pesa customers can now also sign up for M-Shwari, which allows them to save and borrow money.

Kitui County has 18% of the residents are with no formal education, 20% of those with a primary education and 27% of those with a secondary level of education or above are

working for pay. Only 14% of Kitui County residents have secondary level of education or above. The banks present in Kitui County are: National bank of Kenya, Kenya commercial bank, Co-operative bank, Barclays bank, Family bank, K-rep bank, Post Bank and several SACCOs among them; Kitui Teachers, Mwalimu SACCO and Jaribu SACCO for County Government employees, Best Rock SACCO for business people by the Residents of Kitui County and Universal Traders SACCO.

1.3 Statement of the Problem

The level of financial inclusion in African countries is generally very low (Chijioko, 2015). In poorer rural communities, which comprise the bulk of the financially excluded, financial exclusion is mainly due to income-related issues and barriers to accessing formal financial institutions. In a survey conducted by Fin Access (2009) in Kenya, income-related issues such as a lack of income, irregular income and the inability to pay for formal financial services accounted for most of the income-related challenges that resulted in financial exclusion. Financial inclusion can benefit a country's economy immensely if challenges related to financial inclusion are addressed. To increase access to finance, financial services regulations and infrastructure such as mobile payments will have to be reviewed to accommodate the country's poor in urban informal settlements.

Studies on the role of mobile telephone technologies on financial inclusion are limited although there is general acknowledgement that technology has revolutionised the way business is done. Nandhi (2012) studied the effects of EKO mobile banking on the savings behaviour and practices of low income users in the metropolis of Delhi, India. World Bank (2014b) in its Financial Inclusion and Capability Survey Report on Mozambique observed that in order to close the identified gap between urban and rural

populations in accessing financial services, it is recommended to harness the potential of branchless banking.

According to World Bank (2014b), advancing financial inclusion levels in Mozambique will also require a more competitive and diverse financial sector to make products affordable to larger parts of the population. Morawczynski and Miscione (2008) explored trust in mobile banking transactions using the case of MPesa in Kenya and observed that this m-banking application facilitates numerous financial services such as checking account balances, making deposits and withdrawals, transferring money and phone credit to other users. Makore (2012) explored the use of mobile banking services by the poor in South Africa. Porteous (2008) finds that the mobile banking solution had limited impact on financial inclusion as the users were not necessarily the unbanked poor but were formally employed residents of urban areas, the banked and the marginally banked. Clearly, none of the above studies has addressed the effect mobile phone technology on financial inclusion in urban informal settlements, hence the motivation for this study.

1.4 Objectives of the Study

1.4.1 General Objective

The main objective of this study was to analyze the effect of mobile phone technology on financial inclusion in Kitui County.

1.4.2 Specific Objectives

The study was guided by the following specific objectives:

- i. To examine the effect of access to mobile phone services on financial inclusion in Kitui County.

- ii. To determine the effect of financial products offered through mobile phone technology on financial inclusion in Kitui County.
- iii. To assess the effect of quality mobile phone services on financial inclusion in Kitui County.
- iv. To assess the effect of freedom to choose mobile network operator on financial inclusion in Kitui County.

1.5 Research Questions

- i. Does access to mobile phone services improve on financial inclusion in Kitui County?
- ii. Do financial products offered through mobile phone technology have any effect on financial inclusion in Kitui County?
- iii. Do quality mobile phone services have effect on financial inclusion in Kitui County?
- iv. How does freedom to choose mobile network operator affect financial inclusion in Kitui County?

1.5 Justification of the Study

The study analyzed the effect of mobile phones on financial inclusion in urban informal settlements. Kothari (2004) asserts that research inculcates scientific and inductive thinking and it promotes the development of logical habits and organization. The conduct of this research expects to contribute differently to the expectations of different groups of people who will be interested in its findings. First, policy makers will gain an understanding of opportunities available for financial inclusion of Kitui County and financial accessibility development in general. To the academicians and other researchers, the findings of this study will serve as a basis for further investigations in this area. Residents of Kitui County will find the research findings most beneficial by

appreciating how mobile phones are critical in promoting financial inclusion in their area. Area representatives in the legislature and the government will use the findings of this study to craft policies and regulations that will promote financial inclusion and hence reduce poverty in this county. Further, mobile phone manufacturers and service providers will use the findings of this study to estimate the unsatisfied demand for their business.

1.6 Scope of the study

The study aimed at assessing mobile phone technology as a determinant for financial inclusion in Kitui County. The units of analysis were residents of major towns in Kitui County. The study was conducted in the year 2016.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review on financial inclusion. It summarizes the information from other scholars who have carried out their research in the same field of study. The chapter presents the theoretical framework, conceptual framework, and empirical review, critique of existing literature relevant to the study, research gaps and finally the summary of the literature. It expounds on the conceptual and theoretical framework within which the findings and recommendations of this study was conceptualized including the study gaps.

2.2 Theoretical Framework

This sub section identifies theories that are relevant to the study and inform the theoretical background for the study. The theories reviewed are age Agency theory, Technology Acceptance Model and Business Models for Technology based Financial Services Delivery.

2.2.1 Agency Theory

Basically, Agency Theory comes into play when the owner (principal) of a company hires managers (agents) to run the organization. The agents who are hired by the owners of a company are expected to run a successful business that meets the objectives of the principal.

While this seems logical, simple and easy to follow, there are two key issues with Agency Theory; namely the concepts of moral hazard and adverse selection. According to Bonazzi and Islam 2007), Kräkel (2005), and Pearce and Robinson (2008), the

traditional definition of Agency Theory as the separation of ownership and control which can lead to inefficiencies in corporations including: manager's preferences concerning the firm's resources can differ from that of the owners'; with managerial compensation tying pay to firm performance, there is a trade-off between incentives and efficient risk sharing; and managers may make takeover decisions based on short term (Tannous and Cheng, 2008), personal gains without consideration of the long-term costs and inefficiencies that may emerge. However, that there can be positive aspects to the theoretical applications of Agency Theory, since the owner can profit from this separation, referred to as strategic delegation, due to advantages from self-commitment (Abdelsalam, Bryant, and Street, 2008).

Overall, agency problems negatively influence customer loyalty. Information asymmetry has two discriminately distinct dimension, quality and timeliness. Low trust amplifies the effects of all asymmetries, whereas relationship duration reduces the effects of only risk asymmetry. Comparison with a three-factor model shows that the four-factor scale is superior, Kräkel (2005). As projected, majority of the population in informal settlements remain unbanked.

Agency theory and entry barriers in banking

Agency theory analyses the relationships between a business firm's owners and its managers who, under law are agents for the owners. The key issues in agency theory Centre upon whether adequate market mechanism exist that compel managers to act in ways that maximize the utility of a firm's owners where ownership and control are separated. Agency problems emerge because contracts between principals and their

agents are neither costless written nor costless enforced. Managers as agents of a firm's shareholders may not devote their best efforts toward managing the firm unless those efforts are consonant with maximizing their own welfare.

In the commercial banking industry, ownership is becoming increasingly diversified among individual and institutional shareholders and the dominance of individual stockholders in the industry appears, on the whole, to be decreasing (as noted by the Federal Reserve board) these trends may exacerbate "agency problems" in the banking industry if these problems truly exist. Under the terms of agency theory a principal (P) passes on authority to an agent (A) to conduct transactions and make decisions on behalf of the principal(P) in an effort to maximize p's utility preferences. Agency problems can arise if P and A have different goals or P and A have disparate skills in evaluating A's performance or P and A possess different sets of information relevant to the managerial decisions agent must make as a representative of principal or P and A have different degrees of risk aversion. Agency costs arise when information disparities exist that cannot be costless corrected or where preferences of principals and agents cannot be matched at zero cost, giving rise to moral- hazard or adverse- selection problem. A problem that often exists when one person is acting on behalf of another that is created by the reality that the goals of the agent can differ from those of the principal to verify what the agent is doing.

2.2.2 Technology Acceptance Model

Technology Acceptance Model is taken into account since it has been the only one which has captured the most attention of the Information Systems community (Venkatesh & Davis, 2000). The Technology Acceptance Model (TAM) is an information system theory that models how users come to accept and use a technology. It is essential for

anyone willing to study user acceptance of technology to have an understanding of the Technology.

Acceptance Model (Chuttur, 2009). The model suggests that when users are presented with new technology, a number of factors influence their decision about how and when they will use it (Venkatesh & Bala, 2008). Hence, from this model the usage behaviour of mobile subscribers (customers) in using a technology (M-Banking) are predicted to be much dependable on the perceived value of the technology and the perceived ease use of it that will bring forward the intention to use the perceived technology. Perceived usefulness (PU) is the degree to which a person believes that using a particular system will enhance his or her job performance (Davis, 1989). Perceived ease of use (PEOU) on the other hand, is the degree to which a person believes that using a particular system would be free from effort. Since technologies and elements of uncertainty exists in the minds of decision makers with respect to the successful adoption of them, people tends to form attitudes and intention towards trying to learn to use the new technology prior to initiating efforts directed at using (Bagozzi & Warshaw,1992). Therefore, the study findings was made under the assumptions made in the TAM model since it has behavioural element on intention to use/act and be free to act without limitation.

2.2.3 Business Models for Technology based Financial Services Delivery

Technology-based financial services have been developed using different business models in Africa (Faye & Triki, 2013). These models differ primarily on the type of institution establishing the relationship with the end customer, and can be classified into three broad categories: Bank-focused models, Bank-led models, and Nonbank-Led models. Bank-focused models refer to models where a traditional bank uses non-traditional low-cost delivery channels to provide banking services to its existing

customers (Faye & Triki, 2013). Examples range from use of ATMs to internet banking or mobile phone banking to provide certain banking services to customers. This model is additive in nature and may be seen as a modest extension of conventional branch-based banking. Hence, it has limited effects on financial inclusion.

Bank-led models offer a distinct alternative to conventional branch-based banking in that customers are given the opportunity to undertake financial transactions using a whole range of retail agents (or through mobile phones) instead of using bank branches (Faye & Triki, 2013). It may be implemented by using either correspondent arrangements or by creating a joint venture between a Bank and a Telcom operator/non-bank entity. In this model customer account relationship rests with the bank. This model was used in Kenya where private and state-owned banks pioneered the use of mobile technology at retail outlets to deliver banking services to previously unbanked low-income and rural population. For instance, Equity Bank has developed a network of over 1,000 “banking agents.” These agents are lottery outlets, post offices, supermarkets, grocery stores, and petrol stations. In small shops, the shopkeeper handles banking services for customers, and in larger stores, a store employee is dedicated to this purpose. This model has a significant inclusive dimension in the sense that it can contribute to reaching those excluded from financial systems (Faye & Triki, 2013).

Non-bank-led models refer to models where a bank has a limited role in the day-today account management (Faye & Triki, 2013). Typically the bank role is limited to safe keeping funds. Account management functions are conducted by a non-bank entity (very often a Telecom operator) which has direct contact with individual customers. Deployments such as “Orange Money” and MPESA are led by Telcom operators and do not require ownership of a bank account. Similar deployments have been launched by

Telecom groups such as Airtel (“Airtel Money”). This model has a tremendous transformational impact since it has the potential to reach clients that are excluded from conventional financial systems (Demirgüç-Kunt & Klapper, 2012).

2.3 Empirical Review

The preceding section represents literature review in regard to mobile phone technology as a determinant of financial inclusion. Financial Inclusion is important for sustainable economic growth and the improvement of social well-being (Clamara, Pena & Tuesta, 2014). How to build inclusive financial systems is a challenging subject on the agendas of researchers, policymakers, regulators and financial institutions. This is particularly important in developing countries and emerging markets, where banking penetration rates are relatively low. In their study, Clamara et al. (2014) found that loans and mortgages appear to be better drivers for financial inclusion than saving products.

Nandhi (2012) studied the effects of EKO mobile banking on the savings behaviour and practices of low income users in the metropolis of Delhi, India. A critical finding is that EKO mobile banking service is valued as a boon for small savers and users who depended on risky informal savings practices. In particular, a high percentage of users save in EKO mobile banking for emergencies. Yet, savings behaviour indicated that EKO mobile banking accounts have not dispelled the need for some of the savings mechanisms used earlier because different savings methods were perceived as having their own usefulness and purpose. Contrary to expectations, in addition to making payments and deposits easier and more accessible, EKO mobile money accounts also seem to improve efficiency and regularity of other savings mechanisms.

World Bank (2014b) in its Financial Inclusion and Capability Survey Report on Mozambique observed that In order to close the identified gap between urban and rural populations in accessing financial services, it is recommended to harness the potential of branchless banking. Mobile or agent banking can dramatically reduce the costs of delivering financial services outside larger urban centers, in particular in low-density and remote areas with prohibitively high costs of establishing traditional branch networks (World Bank, 2014b). Policies facilitating the introduction of these lower-cost technologies, such as the development of a legal framework, can help reach remote locations and rural populations that were previously excluded from financial services. According to World Bank (2014b), advancing financial inclusion levels in Mozambique will also require a more competitive and diverse financial sector to make products affordable to larger parts of the population. Important barriers to account ownership are lack of money, affordability and lack of financial knowledge of financial products and services.

Morawczynski and Miscione (2008) explored trust in mobile banking transactions using the case of Mpesa in Kenya and observed that this m-banking application facilitates numerous financial services such as checking account balances, making deposits and withdrawals, transferring money and phone credit to other users. To access these services, individuals must register at one of the retail agent outlets, and deposit cash. This cash is thereafter reflected as e-money in a virtual account that is managed by Safaricom. This is called the non-bank led model of m-banking because the customer has no direct relationship with a bank. After this account is created, and an e-money balance established, all of the aforementioned transactions can be conducted via the mobile phone. To access e-money transferred via M-PESA, the recipient must also visit a retail agent. They provide the agent with identification, verify the transaction number, and

convert the e-money balance on their phone into cash. The transferring money option is particularly interesting in this context because it facilitates the transfer of remittances—both domestic and international. In regards to the latter, Safaricom is currently testing the transfer of e-money between Kenya and the UK.

Makore (2012) explored the use of mobile banking services by the poor in South Africa. The study finds that users of the Wizzit mobile bank are mostly the under banked. This study confirms Porteous (2008) initial study of Wizzit which finds that the mobile banking solution had limited impact on financial inclusion as the users were not necessarily the unbanked poor but were formally employed residents of urban areas, the banked and the marginally banked. However, Bångens and Söderberg (2008) argue on who is referred to as poor as the majority of Wizzit clients actually earn less than R1500 (less than 200 USD) per month. Considering these levels of in-come the users of Wizzit identified by Porteous (2008), Bångens and Söderberg (2008) argue that they are not necessarily well off individuals. The study observes that most of the Wizzit users are not necessarily previously unbanked people but constitute the under banked group in financial inclusion.

However, in line with Bångens and Söderberg (2008) argument, the study finds that users are not necessarily prosperous as most are informally employed, some are formally employed with low paying jobs and others observed in this study are under banked pensioners. The formal banking sector is not meeting the needs of these underserved clients and therefore they seek alternatives like mobile banking that meet their needs. Clamara, et al. (2014) lists some barriers to financial inclusion as distance, cost of financial services, documentary requirements (ID, wages, paper work, etc.), lack of trust in financial institutions, lack of money, religious reasons and joint use of financial

services. Adoption of mobile phone technologies in financial services can eliminate most of these barriers, if not all.

This study seeks to determine the role of mobile phone technology on financial inclusion in Kitui County. Nandhi (2012) studied the effects of EKO mobile banking on the savings behaviour and practices of low income users in the metropolis of Delhi, India. Whereas the focus of Nandhi (2012) was on low income users of mobile banking services, their study was only interested on savings behaviour and practices. World Bank (2014b) Financial Inclusion and Capability Survey Report on Mozambique focused more generally of financial inclusion and financial capability. Morawczynski and Miscione (2008) explored trust in mobile banking transactions using the case of MPesa in Kenya. Morawczynski and Miscione (2008) study area was in Kibra, which is one of the urban informal settlements in Kenya.

The environment in the urban informal settlements such as Kibra is quite different from that of a rural county such as Kitui County. Further, the role of mobile phone technology on financial inclusion was not addressed in Morawczynski and Miscione (2008). Makore (2012) and Porteous (2008) explored the use of mobile banking services by the poor in South Africa. Their studies finds that the mobile banking solution had limited impact on financial inclusion. However, their sample was mixed comprising of both residents in urban formal settlements and urban informal settlements and it was possible that the results were compromised. The question of the role of mobile phone technology on the financial inclusion in Kenya is yet to be concluded.

Based on the literature reviewed above, a gap still exists. The role of mobile phone technology on financial inclusion in Kitui County is yet to be determined. Nandhi (2012)

studied the effects of EKO mobile banking on the savings behaviour and practices of low income users in the metropolis of Delhi, India. Whereas the focus of Nandhi (2012) was on low income users of mobile banking services, their study was only interested on savings behaviour and practices.

World Bank (2014b) Financial Inclusion and Capability Survey Report on Mozambique focused more generally of financial inclusion and financial capability. Morawczynski and Miscione (2008) explored trust in mobile banking transactions using the case of MPesa in Kenya. Their study area was in Kibra, which is one of the urban informal settlements in Kenya whose environment is substantially different from that of Kitui County. Further, the role of mobile phone technology on financial inclusion was not addressed in Morawczynski and Miscione (2008). Makore (2012) and Porteous (2008) explored the use of mobile banking services by the poor in South Africa. However, their sample was mixed comprising of both residents in urban formal settlements and urban informal settlements and it was possible that the results were compromised. This study will fill in this gap by determining the role of mobile phone technology on financial inclusion in Kitui County.

2.4 Conceptual Framework

Mugenda (2008) defines conceptual framework as a concise description of the phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study. According to Young (2009), conceptual framework is a diagrammatical representation that shows the relationship between dependent variable and independent variables. The conceptual framework below shows the dependent variable (financial inclusion) and independent variables which include accessibility to

mobile network operators, availability of financial products, quality of products and services and choice of mobile network operator.

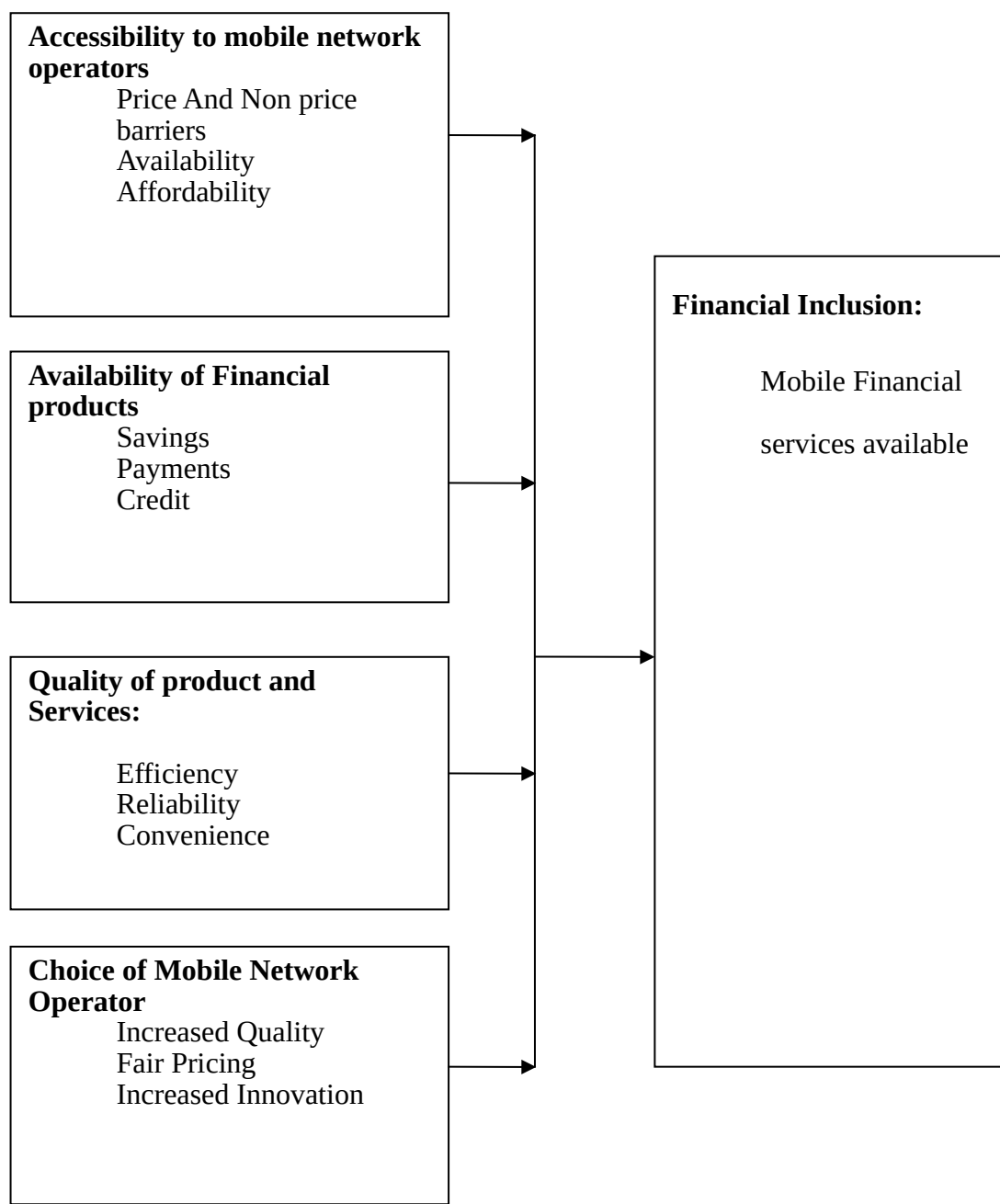


Figure 2.1: Conceptual Framework

Source: Researcher (2017)

CHAPTER THREE

RESEARCH METHODOLOGY**3.1 Overview**

The chapter discusses the research design, the population, the sampling techniques that was used in the study, the data collection instruments, and the data collection methods and procedures. Data analysis and presentation methods were discussed. Kothari (2004) defines research methodology as a way to systematically solve the research problems. Research methodology describes in as much details as necessary, how the research was done; what methods were used to achieve the research objectives. The choice of research method does have an influence on the inferences drawn from the analysis of data (Babbie & Mouton, 2001).

3.2 Study Area

The study analyzed the effect of mobile phone technology on financial inclusion in Kitui County, Kenya. The study area was Kitui County which has been for a long time

marginalized financially. The unit of analysis was individuals visiting MPESA outlets, Petrol stations, Supermarkets and other retail shops within Kitui County.

3.3 Research Design

Research design is the basic plan that indicates an overview of the activities that are necessary to execute the research project. Kothari (2008) define research design as a detailed plan on how the research will be conducted. Donald (2006) observes that a research design is the structure of the research. It is the “glue” that holds all the elements in a research project together. According to Gall *et.al.* (2003), a research design is a plan for collecting and utilizing data so that the desired information can be obtained with sufficient precision. Cooper and Schindler (2008) observe that a research design is a plan and structure of investigation formed to provide answers to research questions.

This study adopted a systematic research design. Mugenda and Mugenda (2008) indicate that systematic research designs are conducted to establish the extent of a range of issues. Researchers argue that in descriptive designs, variables with greater dispersion indicate disparities within the community and provide important clues regarding the issues that the investigator should focus on. The study adopted this design since it is easier to obtain information concerning the current status of the phenomenon and describe what existed with respect to variables of the study. It is also possible to collect a large amount of data for detailed analysis. Kothari (2001) observes that a systematic research design is used when one wants to get information on the current status of a person or an object.

3.3.1 Target Population

A population has been defined as the total collection of elements about which inferences are made and refers to all possible cases which are of interest for a study (Sekaran, 2008).

Other scholars like Smith (2011) view population as the large collection of all subjects from where a sample is drawn. The study targeted residents of major towns Kitui County, Kenya. The target population is estimated to be 7060 individuals' residents of Kitui County, Kenya.

03.3.2 Sampling technique

Sampling is the process of selecting unit's like people and organizations from the accessible population so as to fairly generalize results to the target population (Orodho, 2009). The study will use stratified random sampling technique and convenience sampling to come up with the sample from households and other stakeholders.

Kothari (2011), avers that a large sample size reduces sampling variability and also reduces the probability of biases. To select appropriate sample size the study will employ probability sampling technique and in particular a simple random sampling. As Orodho (2009) stated that 30% of the sample is adequate. The sample will be calculated using Fishers (1954) which has ideal formula for targeted population of individuals in Kitui County.

3.3.3 Sample Size

The sample was determined statistically using the equation below. The sample size was given by: Fisher (1954)

$$n = p \times q \left[\frac{z}{e} \right]^2$$

Where:

n= was minimum sample size required

p = the proportion belonging to the specified category

q = the proportion not belonging to the specified category

z = the value corresponding to the level of confidence required (90% certain=1.65, 95% certain= 1.96 and 99% certain=2.57)

e = the degree of variability in the sample (0.5 is maximum and lowest risk)

$e\%$ = the margin of error required.

When the population is less than 10,000 the sample need to be adjusted according to minimum sample size formula as shown below:

$$n.' = n. / (1+n./N) \text{ where;}$$

$n.'$ = the adjusted minimum sample size

$n.$ = the minimum sample size (as calculated)

N = the total population

Using;

$p=50\%$, $q=50\%$, $z=1.96$ (95% certain) $e= 5\%$ (i.e. within plus or minus 5% of the true percentage, the margin of error that can be tolerated), $N=7060$

$$\begin{aligned} n. &= 50 \times 50 \times [1.96/5]^2 \\ &= 2500 \times 0.153664 \\ &= 384 \end{aligned}$$

Adjusted sample size

$$\begin{aligned} n.' &= 384 / [1 + (384/7060)] \\ &= 384 / 1.05 \\ &= 364.5 \\ n.' &= 365 \end{aligned}$$

The sample size was then adjusted using the formula by Yamane (1967) which is recommended for a population of below 10,000;

$$n_f = \frac{n}{1 + \left(\frac{n}{N} \right)}$$

Where:

n_f = desired sample size

n = calculated sample size

N = estimate of population in study area

$$n_f = \frac{365}{1 + \left(\frac{365}{7060} \right)}$$

$n_f = 348$

A sample size of 351 respondents was distributed as shown in the table below:

Table 3. 1: Sample Size distribution

Source	Population	Ratio	Sample
MPESA Agents	2000	5%	98
Petrol Stations	560	5.3%	30
Supermarkets	1600	5%	77
Equity Bank	900	5.3%	48
Safaricom shop	2000	5%%	98
Total	7060		351

Source: (Researcher's computation, 2017)

3.3.4 Data Collection

According to Creswell (2002) data collection is a means of collecting information from the selected units of a study. Mugenda and Mugenda (2003) observe that the choice of a tool and instrument depends mainly on the attributes of the subject, research topic, data and expected results. Primary data was collected through the use of structured questionnaires and interviews. Kothari (2008) observes that collecting data through the questionnaires saves time since it is possible to collect huge amount of information especially when the population of interest is large. Interviews refer to conversation between two people where questions are asked by the interviewer to obtain information from the interviewee (Kothari, 2004). The personal interviews were conducted in getting data through a set of predetermined questions.

The researcher used this method due to the academic nature of the study. The interview method enabled the researcher to overcome resistance by some respondents. Interview method was appropriate for respondents who do not understand the English language in the questionnaire.

Questionnaires were randomly distributed to the target population. In order to obtain information from the respondents, the researcher addressed the purpose of the study and allays any fears by assuring them that the information will be strictly used for academic purposes only. With the help of three research assistants, the researcher administered the questionnaires in the various outlets within Kitui County. All questionnaires were accompanied by an introduction letter which explains the purpose of collecting information. The data was collected by the researcher with the assistance of three research assistants. The research assistants were trained before embarking on the exercise. Data was collected on a wide range of variables. Data on individual characteristics will include age of the respondent, levels of education, marital status, gender, occupation, and ownership of mobile phone and bank accounts.

3.4 Framework for Data Analysis

This section outlines the methodologies that were employed in analysis of data. Kothari (2004) defines data analysis as the process of computation of certain indices or measures along with searching for patterns of relationship that exist among the data group.

3.4.1 Specification of Empirical Model

The empirical model constituted a regression analysis equation to determine the relationship between the dependent and independent variables and the Analysis of Variance (ANOVA) test to analyze the amount of variation within each of the sample relative to the amount of variation between samples. This is considered important since it makes use of the test in terms of sum of squares effect over sums of squares residual (Sekaran, 2008; Herbert, 2011). Correlation analysis was run to check for relationship among variables.

3.4.2 Estimation Process

Reliability of the measures was assessed with the use of Cronbach's alpha. Cronbach's alpha allows us to measure the reliability of the different categories. It consists of estimates of how much variation in scores of different variables is attributable to chance or random errors. As a general rule, a coefficient greater than or equal to 0.5 is considered acceptable and a good indication of construct reliability. To assess the scales' content validity, the researcher subjected the instrument to experts for review and advice.

3.4.3 Variables and Measurements

The following table clearly explains how both the dependent and independent variables were analyzed:

Table 3.2: Operationalization of Variables

Measurement Variables	Terms of measurement
Financial inclusion	Financial inclusion in the mobile phone industry was measured as a function of Mobile phone penetration, mobile financial services available and the number of customers accessing mobile credit and savings facilities.
Ease of access to mobile phone services	The ease of access to mobile phone services was measured as a function of the percentage change in price and non price barriers, availability of such services and affordability to end user clients.
Financial products offered through mobile phone technology	The financial products offered through mobile phone technology was measured as a percentage change in savings, payments and credit services offered by the mobile phone technology.
Quality of mobile	The quality of mobile phone services was measured as a function

phone services	of qualitative respondent ascertainment towards efficiency, reliability and convenience of such services.
Choice of mobile network operator	The choice mobile network operators was measured in terms of the percentage changes in quality, fair pricing and increased innovation amid the current network operators.

Source: Researcher (2017)

3.4.4 Data Processing and Analysis

Data was cleaned, coded and analyzed from the results of which the researcher is able to make sense of the data. Data was analyzed by the SPSS software and by aid of the regression equation.

3.4.5 Data Analysis

The following regression equation will be used to test the relationship between the dependent variable (financial inclusion) and the independent variables.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where;

Y

= financial inclusion

β_0 = Constant

X_1 = Accessibility

X_2 = Available products

X_3 = Quality of products

X_4 = Freedom of choice of MNO

e = Error term

3.5 Ethical Considerations

Ethics is a code of conduct which the researcher is supposed to obey when conducting the study (Mugenda & Mugenda, 2003). Ethical considerations relate to the moral standards that the researcher should consider in all research methods in all stages of the research design. Due care was given to strict adherence of research procedures particularly those involving human subjects. Since the study involved human participants, care was taken to ensure that they were not affected negatively in any way and the research was not undertaken for personal gain (Mugenda & Mugenda, 2003). Research permit was sought before the research study begun.

The other ethical issues observed throughout the research process included: confidentiality and anonymity, voluntary participation and fairness on the respondents. This meant that if any respondent was uncomfortable to continue on the research, they were allowed to step down. The researcher also ensured that the data collected was treated with utmost confidentiality and was used only for purposes of the research.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Overview

The purpose of this study was to analyze the effect of mobile phone technology on financial inclusion in Kitui County. The analysis presented in this chapter involved the use of descriptive analysis where frequency and percentages were considered. General information was analyzed by descriptive analysis while hypothesis testing was done by use of Univariate and multivariate inferential analysis were conducted to test the relationship between dependent (Financial Inclusion) and independent variables (Accessibility, Availability of product and services, Quality of product and service and Choice of mobile network operator).

4.2 Response Rate

The targeted sample size was 351 participants who comprised of respondents from the MPESA Agents, petrol stations, Supermarkets, Equity banks, and Safaricom shops. Those filled and returned questionnaires were 255 respondents making a response rate of 71.2%. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This means that the response rate for this study which was established to be 71.2% was excellent and therefore enough for data analysis and interpretation. Bryman & Bell (2007) prescribed significant response rate for statistical analysis, established at a minimal value of 50%. Fincham (2008) stated that a low response rate can give rise to sampling bias while higher response rates assure more accurate survey results and therefore recommended a minimal response rate of 60%. Table 4.1 summarizes the response rate in this study.

Table 4.1: Response rate

Questionnaires	Frequency	Percent (%)
Response	255	71.2%
Non-response	96	28.80%
Total	351	100.00%

Source: (Researcher, 2017)

4.3 Pilot Test Results

To establish validity, the research instrument was given to 10 respondents from the region who were experienced financial inclusion where financial services were assessable to low income people to evaluate the relevance of each item in the instrument in relation to the objectives. The same were rated on the scale of 1 (very relevant) to 4 (not very relevant). Validity was determined by use of content validity index (CVI). CVI was obtained by adding up the items rated 3 and 4 by the respondents and dividing this sum by the total number of items in the questionnaire. A CVI of 0.747 was obtained. Oso and Onen (2009), state that a validity coefficient of at least 0.70 is acceptable as a valid research hence the adoption of the research instrument as valid for this study.

The questionnaires used had Likert scale items that were to be responded to. For reliability analysis Cronbach's alpha was calculated by application of SPSS. The value of the alpha coefficient ranges from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales (i.e., rating scale: 1 = weak, 5 = strong). A higher value shows a more reliable generated scale. Cooper & Schindler (2008) indicated

0.7 to be an acceptable reliability coefficient. The study involved questionnaires from 7 respondents, who were selected to participate in the pilot study. Since, the alpha coefficients were all greater than 0.7, a conclusion was drawn that the instruments had an acceptable reliability coefficient and were appropriate for the study. The reliability statistics for the study variables are presented in Table 4.2

Table 4.2: Reliability Results

Variable	Cronbach's Alpha	Items
Accessibility	0.71	4
Availability of financial products	0.73	3
Quality of product and Services	0.75	2
Choice of Mobile Network Operator	0.77	2

Source: (Researcher, 2017)

4.4 General Information

The study sought to determine the information about the respondents involved in the study of on effect of mobile technology on financial inclusion in Kitui County. The information was presented in the section below.

4.4.1 Age of the Respondents

The researcher sought to find out the age distribution of the respondents. The results were presented in Table 4.1 below.

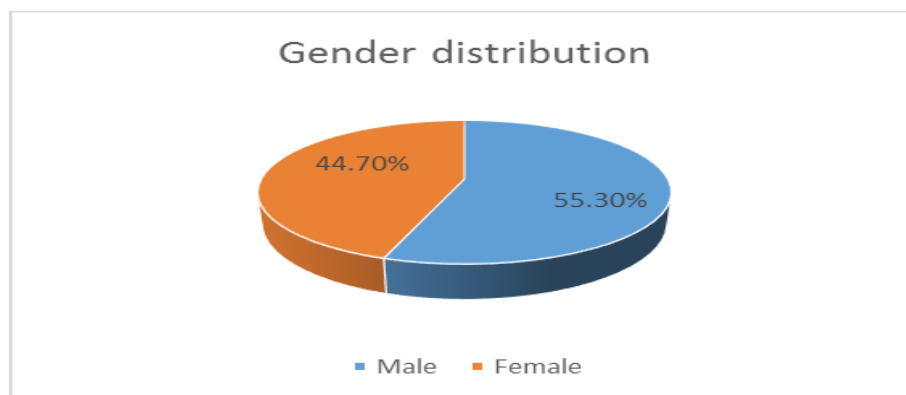
Table 4.3 Age Distribution

Age	Frequency	Percentage
20-29	67	26.3
30-39	97	38.0
40-49	61	23.3
Above 50	30	11.8
Total	255	100

Source: (Researcher, 2017)

According to the findings in table 4.1, majority of the respondents (38%) were aged between 30-39 while the 20-29 had (26.3%) and 40-49 had (23.3 %).Above 50 years were only 11.8% respondents. represented the least number of respondents.

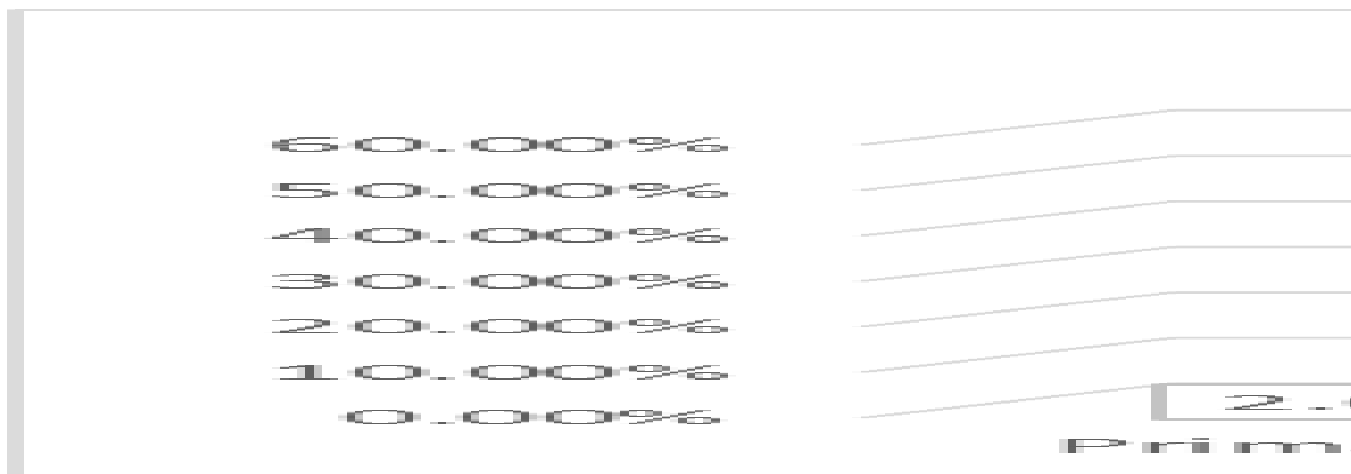
Figure 4.1: Gender of the Respondents



Source: (Researcher, 2017)

From the findings in Figure 4.1 majority of the respondents were male (55.3%).there were 44.7 % female respondents from the study. Both genders were well represented to carry the study out.

Figure 4.2: Level of Education



Source: (Researcher, 2017)

From the findings majority of the respondents 50.2% had college education. There was 16.5% representation of secondary education while those had university education were 31.0%.primary education was the least represented with only 2.0% of the total respondents. The lowest education level. This shows that the study was well represented in terms of education level.

Table 4.4: Occupation of the Respondents

Occupation	Frequency	Percentage
Small trader	77	30
Casual labourer	80	31.4
housewife	1	0.04
Profession worker	97	38
Total	255	100

Source: (Researcher, 2017)

From the findings majority of the respondents were professional workers representing a 38%.The respondents were closely followed by casual labours who represented 31.4

%. Small trades represented 30% of the total respondents while there was only a small fraction of housewife's. All the occupations were well represented in the study.

The study further sought to know for how long the respondents had used mobile phone.

Table 4.5 shows the response of the duration the respondents used the phone.

Table 4.5: Duration used Mobile Phone

Duration	Frequency	Percentage
Less than 1 year	19	7.5
1-2 years	58	22.7
3-5 years	66	25.9
5-10 years	18	7.1
Over 10 years	93	36.5
Total	255	100

Source: (Researcher, 2017)

From the findings most of the respondents 36.5% had used mobile phone for more than 10. 25.9 % of the respondents had used mobile phone for 3-5 years However, 7.2 % had used mobile phone for 5-10 years.

The study sought to know which mobile operator was commonly used by the respondent's. Table 4.6 shows the mobile operators commonly registered by the respondents.

Table 4.6: Mobile Operator Commonly used

Mobile operator	Frequency	Percentage
Safaricom	226	88.6
Airtel	29	11.4
Total	255	100

Source: (Researcher, 2017)

From the findings majority of the respondents (88.6%) used Safaricom as their mobile operator, Airtel mobile operator had only 11.4 %.

The study sought to know how respondent's repondents receive money. Table 4.7 shows how respondents receive money.

Table 4.7: Mode of Receiving Money

Mode of receiving money	Frequency	Percentage
Mobile banking	245	96.1
Online banking	10	3.9
Total	255	100

Source: (Researcher, 2017)

Majority of the respondents 96.1% received money via mobile banking. Only a small number received money via online banking.

The study sought to determine why they preferred the above mentioned methods. Table 4.8 shows why the respondents preferred the methods mentioned above.

Table 4.8: Preference of Mode of Receiving Money

Reason	Frequency	Percentage
Convenience	199	78.0
Security	21	8.2
Speed	14	5.5
simplicity	21	8.2
Total	255	100

Source: (Researcher, 2017)

From the findings Majority of the respondents (78.0%) preference of mode of receiving money was based on security, however other factors that were considered included security, speed and simplicity.

4.5 Descriptive Statistics

The characteristics of the responses that were received are presented in the following subsections under each variable.

4.5.1 Level of inclusion of Mobile Financial Services

The researcher sought to establish the extent to which level of inclusion of the mobile financial services. The results were recorded in table 4.9 below.

Key: (SA) -Strongly Agree (MS) – Moderately Strong (N) - Neutral (MW) – moderately Weak (W)-Weak.

Table 4.9. Level of Financial Inclusion

SERVICE	SA	M S	N	M W	W	Mea	S.D
Payment services	93.7	6.3%	-	-	-	1.06	.243
Savings	70.3	25.9%	3.1	-	-	1.32	.532
Deposits	71.4	24.3%	0.8	-	-	1.33	.577
Micro-loans	88.6	11.4%	-	-	-	1.11	.318

Average	1.202	.041
		7

Source: (Researcher, 2017)

Findings from table 4.9 indicate that majority of the respondents (93.7%) strongly agreed that payment services is significant on financial inclusion with a strong mean of 1.06 and standard deviation of .243. Only 6.3% moderately agreed. Further the result shown that majority of the respondents (70.3%) believe savings is a major factor in financial inclusion with a mean of 1.32 and a standard deviation of .532.(71.4%) strongly agreed that deposits is an imperative in financial inclusion. Finally (88.6%) strongly agreed that micro-loans services is a significant driver of financial inclusion. The mean was 1.11 and a standard deviation of .318.The mean of Level of financial inclusion was 1.202 and a standard deviation of 0417.

4.5.2: Ease of Access to Mobile Services

The researcher sought to establish the importance of Ease of access to mobile services on financial inclusion. The results were recorded in table 4.10

Table 4.10: Ease of access to mobile services

SERVICE	M	I	N	UI	M	Mea	S.D
					U	n	
Price of phone is prohibitive	80.4	19.2	-	-	-	1.19	.395
	%	%					
Mobile network is not always available	83.9	14.9	0.8	-	-	1.17	.393
	%	%	%				
There is language barrier	78.0	18.0	2.0	1.2	-	1.26	.550
	%	%	%	%			

Those services are not enabled on all phones	80.4	17.6	1.2	0.8	-	1.22	.495
I don't trust the mobile network vendors	87.7	11.4	0.8	-	-	1.13	.359
Requires technical knowledge in using mobile phones	83.5	16.5	-	-	-	1.16	.372
Average						1.18	.042
							7

Source: (Researcher, 2017)

Table 4.10 shows majority of the respondents (80.4%) indicated price of phone is most important factor in ease of access to mobile services. This was shown by a mean of 1.19 and a standard deviation of .395. Only (19.2%) that price of phone is important. Also majority (83.9%) of the respondents sighted that availability of mobile network is most important in ease of access of mobile service. Majority of the respondents (78.0%) also sighted language as a very important factor in determining ease of access of mobile services. Enabling of mobile services on all phones was also sighted as most important factor by majority of the respondent (80.4%) in ease of access of mobile services with a mean of 1.22 and a standard deviation of .495. Finally trust by mobile network vendors and technical knowledge of using mobile phone services were as well sighted by a majority of the respondents as important consideration in ease of access to mobile services. The mean of Ease of access to mobile services was 1.18 and a standard deviation of 0427.

4.5.3: Quality of Mobile Phone Services

The researcher sought to establish the importance of Quality of mobile phone services on financial inclusion. The results were recorded in table 4.11

Table 4.11: Quality of Mobile Phone Services

SERVICE	SA	M S	N	M W	W	Mean	S.D
Easy and convenient way than banking halls	87.8%	12.2%	-	-	-	1.12	.327
Easy to withdraw any time	89.0%	11.0%	-	-	-	1.11	.313
Offers a safe place to save money	86.3%	13.7%	-	-	-	1.14	.345
Helps me to avoid unnecessary spending	88.2%	11.4%	0.4%	-	-	1.12	.339
Transaction is fast and quick	90.2%	9.4%	0.4%	-	-	1.10	.316
Average						1.12	.328

Source: (Researcher, 2017)

Findings from table 4.11 displays that majority 87.7% ascertains that easy and convenient way than banking halls as most important factor in quality of mobile phone services with a mean of 1.12 and standard deviation of .327. Easy to withdraw any time was also considered as most important factor by majority of the respondents (89.0%).Majority of the respondents (86.3%)also said that mobile phone services offers a safe place to save money with a mean of 1.14 and standard deviation of .345. Finally majority of the respondents said that fast and quick transaction as most important factors in ensuring quality of mobile phone services. The mean of Quality of mobile phone services was 1.12 and a standard deviation of .328

4.5.4: Choice of Mobile Network Operator

The researcher sought to establish the importance of choice of mobile phone operator on financial inclusion. The results were recorded in table 4.12

Table 4.12: Choice of mobile network operator

SERVICE	SA	M S	N	M W	W	Mean	S.D
Stability of network while undertaking Transactions	86.7%	13.3%	-	-	-	1.13	.341
Offers fair pricing during transactions	89.4%	10.6%	-	-	-	1.11	.308
Helps to avoid unnecessary spending	86.7%	13.3%	-	-	-	1.13	.341
Offers an easy to learn transaction mode	90.2%	9.8%	-	-	-	1.10	.298
Offers a variety of product that makes it convenient	85.1%	12.9%	1.2%	0.8%	-	1.18	.466
Average						1.4125	.109

Source: (Researcher, 2017)

Table 4.12 shows that most of the respondents (86.7%) considered stability of network while making transaction as most important factor in choice of mobile operator. This had a mean of 1.13 and a standard deviation of .341. Fair pricing was also considered by majority of the respondents (89.4%) in choice of mobile network operator. Easy to learn transaction mode was considered by 9.02% of the respondents as most important factor when choosing mobile operator. The mean of the choice of mobile network operator was 1.412 with a standard deviation of .0109.

4.5.5: Financial Products Offered

The researcher sought to establish the importance of financial products offered on financial inclusion. The results were recorded in table 4.13

Table 4.13: Financial products offered

SERVICE	SA	M S	N	M W	W	Mean	S.D
Offers savings product	92.2%	7.1%	0.8%	-	-	1.09	.308
Offers better payment product at a fair price	90.6%	9.4%	-	-	-	1.09	.293
Offers fair pricing during transactions	91.0%	9.0%	-	-	-	1.09	.287
Offers credit fairly compared to other provider	92.9%	7.1%	-	-	-	1.07	.257
Average						1.085	.286

Source: (Researcher, 2017)

The study above shows that 92.2% stated that a mobile network that offers savings product as most important. Also majority of the respondents 90.6% stated that mobile network operator that offers better payment product at a fair price as most important. Finally a mobile financial provider that offers credit fairly compared to others was considered as most important by majority of the respondents. The total mean of the financial product offered was 1.085 and a standard deviation of 0.286.

4.6 Inferential Statistics

The study further applied general linear Regression model and correlation analysis to determine the predictive power and correlation of the independent variables in the Mobile phone technology as a determinant of financial inclusion. The researcher applied correlation analysis and regression analysis to all the study variables.

4.6.1 Correlations Analysis

The study sought to establish whether there was any relationship between the variables under study. The variables defining the independent variable were correlated against the dependent variable. Correlation analysis assists the researcher to establish the nature of the relationship in order to make a valid conclusion and recommendation about the variables. Normally a correlation coefficient lies between +1 and -1. A positive correlation means the two items under test affect each other in a way that when one improves the other also improves and a negative correlation means that when one factor increases the other reduces. The test of significance in the relationship is done at either a significant value of 5% or 1%. The results of this study were presented in table 4.14

Table 4.14: Pearson's Correlations

		Financial inclusion	Ease of access	Availability of financial products	Quality of product	Freedom of choice of MNO
Financial inclusion	Pearson Correlation	1				
	Sig. (2-tailed)					

Ease of access	Pearson Correlation	.895**	1			
	Sig. (2-tailed)	0.000				
Availability of financial products	Pearson Correlation	.909**	.872**	1		
	Sig. (2-tailed)	0.000	.000			
Quality of product	Pearson Correlation	.717**	.709**	.606**	1	
	Sig. (2-tailed)	0.000	.000	.000		
Freedom of choice of MNO	Pearson Correlation	.882	.829**	.837	.527**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

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

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

Source: (Survey Data), 2017

From table 4.14 it is seen that there is a strong positive correlation of 0.895 which is very significant at a value of 0.00 between financial inclusion and Ease of access. This indicates that by improving on ease of access of financial products is also able to improve on financial inclusion.

The study indicates that there is a very strong positive correlation of 0.909 between Availability of financial products and financial inclusion. For the relationship between Quality of product and financial inclusion the study established a strong positive correlation of 0.717 that was very significant (0.000) at 1% level of significance. The

study also indicates that there is a positive correlation of .882 which is very significant at a value of 0.00 between Freedom of choice of mobile Network operator and financial inclusion. This indicates that apt freedom of choice of mobile network operator is also able to improve on the financial inclusion. From the study it's evident that all factors under study had a positive correlation with the financial inclusion. This study concurs with Morawczynski and Miscione (2008) who did a study in trust in mobile banking transactions using the case of Mpesa in Kenya and observed that this m-banking application facilitates numerous financial services such as checking account balances, making deposits and withdrawals, transferring money and phone credit to other users.

4.7 Hypothesis Testing of the Study Variables

This study sought to establish the influence of the study variables (ease of access to mobile phone services, financial products offered through mobile phone technology, quality of mobile phone services and freedom to choose mobile network operator) on financial inclusion. The tests were carried out using simple and multiple regression analysis. The tests were done at 5% significance level ($\alpha = 0.05$). The evaluation focused on the hypotheses derived from the objectives of the study.

To test hypotheses, it was necessary to compute composite scores for the variables that had several measures. In this regard, several measures of each variable were collapsed into one composite index. Similarly, composite scores were calculated to represent the responses to the various attributes that define the variables.

The study sought to analyze the effect of mobile phone technology on financial inclusion. The factors investigated were: ease of access to mobile phone services, financial products

offered through mobile phone technology, quality of mobile phone services and freedom to choose mobile network operator. The study variables were regressed against the dependent variable and a multiple regression model was fit to determine the effect of variable.

4.7.1 Multiple Regression Analysis

The study sought to analyze the effect of mobile phone technology on financial inclusion. The factors investigated were: ease of access to mobile phone services, financial products offered through mobile phone technology, quality of mobile phone services and freedom to choose mobile network operator.

4.7.2 Assumptions of Multiple Regression Analysis

4.7.2.1 Multicollinearity Test

Multicollinearity was tested by computing the Variance Inflation Factor (VIF) and its reciprocal, the tolerance. It is a situation in which the predictor variables in a multiple regression analysis are themselves highly correlated making it difficult to determine the actual contribution of respective predictors to the variance in the dependent variable. (Gujarat & Porter, 2009). Thus, collinearity diagnostics measure how much regressors are related to other regressors and how this affects the stability and variance of the regression estimates. The existence of multicollinearity is a vital problem in applying multiple time series regression model (Gujarat & Porter, 2009).

To detect for multicollinearity, the study examined the correlation matrix or by using Variance Inflation Factor (VIF) as shown in table 4.15. The Variance Inflation Factor (VIF) quantifies the severity of multicollinearity in an ordinary least- squares regression

analysis. O'Brien (2007) suggested that a Variance Inflation Factor (VIF) greater than 10 are a sign of multicollinearity; the higher the value of VIF's, the more severe the problem. Results in table 4.30 show that all the variables had a variance inflation factors (VIF) of less than 10 that is, Ease of access (2.897), Availability of product offered (1.361), Quality of product offered (5.186) and freedom to choose mobile network (8.572). This implies that there was no collinearity with the variables thus all the variables were maintained in the regression model.

Table 4.15 Collinearity Statistics

Variables	Tolerance	VIF
Ease of access	.345	2.897
Availability of products	.735	1.361
Quality of product offered	.193	5.186
Freedom to choose mobile network	.117	8.572

operator

Source: (Researcher, 2017)

4.7.2.1 Test of Normality

Normality was tested using the Shapiro-Wilk test which has power to detect departure from normality due to either skewness or kurtosis or both. Its statistic ranges from zero to one and figures higher than 0.05 indicate the data is normal (Razali & Wah, 2011). Shapiro-Wilk test assesses whether data is normally distributed against hypothesis that:

H_0 : Sample follows a Normal distribution.

H_a : Sample does not follow a Normal distribution.

The tests reject the hypothesis of normality when the p-value is greater than or equal to 0.05 (Sekaran & Bougie, 2010). Table 4.16 shows that the Shapiro-Wilk statistics were Ease of access $p = .008$, Availability of products $p = .016$, Quality of product offered p

= .026 and Freedom to choose mobile network operator $p = .040$ respectively. Since the p-values were greater than the significance level (0.05) (not significant if $p < .05$), this implies that the variables were normally distributed.

Table 4.16 Shapiro-Wilko

	Statistic	Df	p-value
Ease of access	.934	39	.008
Availability of products	.874	39	.016
Quality of product offered	.855	39	.026
Freedom to choose mobile network operator	.725	39	.040

Source: (Researcher, 2017)

The regression model was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Whereby Y represent the financial inclusion, X_1 ease of access, X_2 is availability of products, X_3 is quality of product offered and X_4 is Freedom of choice of mobile network operator. B_0 is the model's constant, and $\beta_1 - \beta_4$ are the regression coefficients while ε is the model's significance from f-significance results obtained from analysis of variance (ANOVA).

Table 4.17: Model's Goodness of Fit Statistics

R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
.957 ^a	.917	.914	.15476	0.774

a. Predictors: (Constant), ease of access, Availability of products, Quality of products and Freedom of choice of mobile network operator

Source: (Researcher, 2017)

Table 4.17 shows that there is a good linear association between the dependent and independent variables used in the study. This is shown by a correlation (R) coefficient of 0.957. The determination coefficient as measured by the adjusted R-square presents a strong relationship between dependent and independent variables given a value of .914. This depicts that the model accounts for 91.4% of the total observations while 8.6% remains unexplained by the regression model.

Table 4.18: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.187	4	7.046	294.204	.000 ^b
	Residual	2.563	107	.024		
	Total	30.748	111			

a. Predictors: (Constant), ease of access, Availability of products, Quality of products and Freedom of choice of mobile network operator

b. Dependent Variable: financial Inclusion.

Source: (Researcher, 2017)

The ANOVA statistics presented in Table 4.18 was used to present the regression model significance. The significance value of $p= 0.000$ was established and since the p-value was less than 0.05, the model was considered significant for the study.

Table 4.19: Regression Coefficients

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	-1.511	.209		-7.229	.000
Ease of access	.364	.067	.219	5.432	.000
Availability of products	.177	.106	.117	1.669	.018
Quality of product offered	.469	.078	.380	6.012	.000
Freedom to choose mobile network operator	.330	.052	.352	6.346	.000

a. Dependent Variable: Financial inclusion.

Source: (Author), 2017

The following regression result was obtained:

$$Y = -1.511 + 0.364X_1 + 0.177X_2 + 0.469X_3 + 0.330X_4$$

From the model, when other factors (ease of access to mobile phone services, financial products offered through mobile phone technology, quality of mobile phone services and freedom to choose mobile network operator) are at zero, the financial inclusion will be -1.511. Holding other factors constant, a unit increase in Ease of access would lead to 0.364 increase in financial inclusion. On the other hand, holding other factors constant, a unit increase in Availability of product would lead to a 0.177 increase in financial inclusion

Table 4.19 also shows that holding other factors constant, a unit increase in Quality of product offered would lead to a 0.469 increase in financial inclusion. The findings, further, shows that unit increase in freedom to choose mobile network operator would lead to a 0.330 increase in financial inclusion. All the variable under study had a p-value of < 0.05 which means they were all significant and positively influenced financial inclusion in Kitui. This study concurs with a survey done by World Bank (2014b) on

Financial Inclusion and Capability Survey Report in Mozambique and observed Mobile or agent banking can dramatically reduce the costs of delivering financial services outside larger urban centers, in particular in low-density and remote areas with prohibitively high costs of establishing traditional branch networks.

4.7.2 Results of Hypothesis Testing

Table 4.20: Hypotheses for mobile phones on financial inclusion in urban informal settlements.

Managerial risk	Hypothesis	P-Value	Decision
aversion proxy			
Accessibility to mobile network operators	H _{01a} : Ease of mobile phone technology does not significantly influence financial inclusion in Kitui County	.000	Rejected
Availability of Financial products	H _{01b} : Financial products offered through mobile technology does not significantly influence financial inclusion in Kitui County.	.018	Rejected
Quality of product and Services	H _{01c} : quality of mobile phone services does not significantly influence financial inclusion in Kitui County	.000	Rejected

Choice of Mobile	H _{01d} :freedom to choose mobile network	.000	Rejected
Network Operator	operator does not significantly influence		
	freedom to choose mobile network operator		

CHAPTER FIVE

SUMMARY OF FINDINGS , CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

This chapter provides relevant discussion on the research objective from data processed in the previous chapter. This chapter presents the summary of the data findings presented in the previous chapter, conclusions and recommendations there-to. The chapter is, thus, structured into summary, conclusions, and recommendations of research findings and further research.

5.2 Summary of Findings

The study is based on establishing the effect of mobile phone technology on financial inclusion. Based on this preposition, theoretical literature was reviewed. Agency theory and Technology acceptance model were reviewed. The study examined several empirical literature relevant to the study area. Based on theories, empirical work and literature, conceptual framework of the relationship between independent and dependent variables was drawn.

The study revealed that there is a positive impact between financial inclusion and mobile phone technology used. The mobile operators reported generating high revenues from mobile money transfers which was fueled by a high number of consumers moving money in their bank account using their mobile phones. It was found that mobile banking services and financial inclusion have a very strong relationship positively. All the variables under study established a strong positive correlation between them and financial inclusion. Further this relationship is greatly enhanced by a strong positive mobile subscriber penetration rate as well as the strong growth on subscribers registering for

mobile money services and increased agent network that facilitates the end to end mobile transfer transactions.

The mobile money platform offered by mostly mobile services providers has been identified as the main contributor of this phenomenon innovation that has focused on the convenience, reliability, flexibility and structure of the service offering to a very strongly accepted and integrated service within the subscribers. The government being very keen on increasing financial inclusion in its development agenda has continued to be involved in this mobile transfer market as a regulator and offers a framework of operation from a risk and operational point hence making these services well embedded in both formal and informal economic activities.

5.3 Conclusion

From the finding above, it can be concluded that before introduction of mobile phone technology greatly influences financial inclusions in Kenya, there was a significant gap and challenge in accessing financial inclusion due to limited number of mobile technology the country. With the introduction of mobile money banking services facilitated by the increasing number of subscribers and penetration rate, this has been the key milestone in the strengthening of the service and acceptability by the financially excluded population mainly in the marginalized set ups. It can further be seen that fundamental contributors towards this phenomenal growth of financial inclusion in Kenya.

Further the Ease of access to mobile services network has been a key contributor to the enhancing smooth service delivery in financial inclusion. Quality of mobile phone technology was cited as a major contributor to financial inclusion in Kenya. Fast and

quick transaction as most important factors in ensuring quality of mobile phone services. Easy to learn transaction mode was considered as most important factor when choosing mobile operator. Also a mobile operator offering a variety of products was considered most important by majority of the respondents. Mobile network operator that offers better payment product at a fair price as most important. Finally a mobile financial provider that offers credit fairly compared to others was considered as most important by majority of the respondents. It is noted that the other factors that may have contributed to the growth of financial inclusion in the country is the convenience, Reliability and flexibility of the service towards vast acceptable points. This has facilitated acceptability and use of the services amongst various users across ages, gender, educational levels, and income levels which predominantly defines usage patterns in Kenya.

5.4 Recommendations

From the above conclusion, the study recommends that policy makers consider mobile technologies in their formulation of policies because despite negligible relationship between mobile technology and financial inclusion, the impact could be pronounced if much change is recorded in technological developments and more customers adopt mobile banking services.

The study further recommends that banks and other services that use mobile money platform should keep adopting and using mobile banking in their operations because the number of people with access to a mobile hand set is increasing every day. In addition,

the convergence of mobile phones and commercial banks has revolutionized the banking operations. For example, Safaricom limited in conjunction with Commercial Bank of Africa launched M-Shwari services which provide registered members an opportunity to borrow money from the bank and repay conveniently. This has introduced another perspective that is likely to revolutionize the operations for increased profitability.

5.5 Suggestion for Further Research

There is need for further research to be undertaken for similar study but for a longer duration of time to evaluate the long term relationship. Further, a research gap was identified in the banking mobile savings model which needs to be filled by conducting a research to establish an attractive package that can provide for consumers beyond what basic mobile savings systems already offer.

REFERENCES

- AFI Maya Declaration Progress Report (2012). Commitments You Can Bank On
 Bångens, L and B.Söderberg. 2008. Mobile Banking – Financial Services for
 the Unbanked?
- Beck, T., Demirgüç-Kunt, A. & Martínez Peria, M., (2007a). *Banking Services for
 everyone? Barriers to bank access and use around the world* Policy Research
 Working Paper 4079. Washington DC: World Bank.
- Bold, C. (2011). Branchless Banking in South Africa. *Consultative Group to Assist the
 Poor Technical Guide*. Cape Town: CGAP Publication.
- Brooks, C. (2008). *Introductory Econometrics for Finance*. 2nd ed. Cambridge. Cambridge
 University Press
- Burgess, R. & Pande, R. (2005). Can rural banks reduce poverty? Evidence from the
 Indian social experiment. *American Economic Review*, 95(3), 780-95.
- Central Bank of Kenya, (2011). Guidelines on Agent Banking, *Banking Journal: CBK*,
 15: 27-37.
- Central Bank of Kenya. (2013). *Technical Cooperation among Developing Countries
 Programme on “Mobile and agency banking in Kenya”*, Kenya School of
 Monetary Studies, Nairobi Kenya.
- CGAP (2010). *Focus Note: Regulating Branchless Banking agents*. Available online
 from: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2012/06/agentnetworksinbrazilcgapfgv1_7.pdf1934. Accessed on 15th Feb2015
- CGAP. (2010). MIV Survey Report. Market Data and Peer Group Analysis. Available
 online from: [www.global impactcap.com/assets/uploads/CGAP 2010 MIV
 Survey Report.pdf](http://www.globalimpactcap.com/assets/uploads/CGAP_2010_MIV_Survey_Report.pdf)

CGAP. (2011). *Agent management toolkit: Building a Viable Network of Branchless Banking Agents*. Available online from; [http://www.cgap.org/sites/default/files/CGAP-](http://www.cgap.org/sites/default/files/CGAP-Technical-Guide-AgentManagement-Toolkit-Building-a-Viable-Network-of-Branchless-Banking-Agents-Feb-2011.pdf)

[Technical-Guide-AgentManagement-Toolkit-Building-a-Viable-Network-of-Branchless-Banking-Agents-Feb-2011.pdf](http://www.cgap.org/sites/default/files/CGAP-Technical-Guide-AgentManagement-Toolkit-Building-a-Viable-Network-of-Branchless-Banking-Agents-Feb-2011.pdf) [13th Feb 2015]

Chandran, C., (2004). *Research Methods with illustrations from Christian Ministries*. Nairobi: Starbright Services limited.

Chatfield, C. (2004). *The Analysis of Time Series, Texts in Statistical Science*, 6th ed., Boca Raton, FL: Chapman and Hall/CRC

Clamara, N., Pena, X. & Tuesta, D. (2014). Factors that matter for Financial Inclusion. Evidence from Peru. *BBVA Research. Working Paper 14/09*. Madrid

Collins, D., Morduch, J., Rutherford, S. & Ruthven, O. (2009). *Portfolios of the Poor*. New Jersey: Princeton University Press.

Davidson, N. and Pénicaud, C.(2011). *State of the Industry: Results from the 2011 Global Mobile Money Adoption Survey*. GSMA. Available online from https://www.gsma.com/mobilefordevelopment/.../MMU_State_of_industry_AW_Lates.

Demirgüç-Kunt, A., & Klapper, L. (2012). *Financial inclusion in Africa. Working Paper 6088*. Geneva: World Bank.

FSD Kenya & Central Bank of Kenya (2013). *FinAccess National Survey 2013: Profiling developments in financial access and usage in Kenya*. Nairobi, Kenya: FSD Kenya

FSD Kenya & Central Bank of Kenya (2011). *Financial Inclusion in Kenya. Survey results and analysis from FinAccess 2001*. Nairobi, Kenya: FSD Kenya

- FSD Kenya & Central Bank of Kenya (2009). *Results of the FinAccess National Survey: Dynamics of Kenya's Changing financial landscape*. Nairobi, FSD Kenya.
- Gitonga, C.N. & Njeru, A. (2014). Assessment of Factors Influencing Adoption of Agency Banking in Kenya: The Case of Kajiado North Sub County. *International Journal of Business and Commerce*, 3(8), 91-111.
- Jankowicz, D. (2009). *Business Research Projects* (2nd Ed.). London: Chapman Hall.
- Kinyanjui, B., (2011). *The Impact of Mobile Communication Technologies in Medium and Small Enterprises: Case Study of Nairobi City*. MSc. Thesis submitted at the University of Nairobi, School of Computing and Informatics.
- Kothari, C.R. (2004). *Research Methodology: Methods and Techniques* (2nd Ed.). New International (p) Ltd, New Delhi, India.
- Laudon, C. L. & Laudon, J. P. (1996). *Information Technology: Concepts and Issues*, Boyd and Fraser, MA Dewey.
- Leedy, P. D. & Ormrod, J.E. (2010). *Practical Research, Planning and Design*. New York: Pearson.
- Mago, S. & Chitokwindo, S. (2014). The Impact of Mobile Banking on Financial Inclusion in Zimbabwe: A Case for Masvingo Province. *Mediterranean Journal of Social Sciences*, 5(9), 221-230.
- Makore, M. P. (2012). *Exploring use of mobile banking services by the poor: Case of Wizzit Bank South Africa*. University of KwaZulu Natal, Durban, South Africa.
- McKay, C. (2011). Ghana: Aiming for interoperability in branchless banking. consultative group to Assist the Poor. *Journal of Economic Literature*, 35, 34-44.

- Mitton, L. (2008). *Financial inclusion in the UK: Review of policy and practice*. Joseph Rowntree Foundation.
- Mohan R. (2006). *Economic Growth, Financial Deepening and Financial Inclusion*, Address to Annual Banker Conference at Hyderabad on November 3.
- Mohan, R. (2006). *Economic Growth, Financial Deepening and Financial Inclusion*. Address at the Annual Bankers Conference, 2006.
- Morawczynski, O. and Miscione, G. (2008). *Exploring trust in mobile banking transactions: The case of MPesa in Kenya*. University of Edinburgh
- Mugenda, G., and Mugenda, V. (2003). *Research Methods*. Nairobi: Acts Press.
- Mugenda, O.M. & Mugenda, A.G. (2009). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi. ACTS Press Kenya.
- Munyegera G.K. and Matsumoto T. (2014). *Mobile Money, Rural Household Welfare and Remittances: Panel Evidence from Uganda*, National Graduate Institute for Policy Studies Tokyo, Japan.
- Nandhi, M.A. (2012). Effects of mobile banking on the savings practices of low income users - The Indian experience. *Institute for Money Technology and Financial Inclusion*. Working Paper 2012-7.
- Ndung'u, N. (2013). *Kenya's mobile phone financial services: A revolution in the financial landscape*. A presentation at a national conference on Kenya's economic successes, prospects and challenges. September 17 – 18, 2013, Nairobi.
- Ngugi, E. (2013). *Exploring Kenya's inequality: Pulling apart or pooling together*. Publication of Kenya National Bureau of Statistics (KNBS) and Society for International Development (SID). Nairobi: KNBS

- Neuman, W. L. (2007). *Social Research Methods: Qualitative and Quantitative Approaches*. Boston: Allyn & Bacon
- Ndii, D., Beck, T., Ellis, K., Lemma, A., Rud, J. P., Malkamaki, M., Johnson, S., Arnold, S., & Fouillet, C. (2011). *Financial inclusion in Kenya: Survey results and analysis from FinAccess 2009*. Nairobi, Kenya: FSD Kenya.
- Olang, S. and Okoth, O. (2012). Taking stock of social economic challenges in Nairobi slums. Nairobi :Friedrich-Ebert-Stiftung
- Ombutora, E. K. & Mugambi, F. (2013).Role of agency banking on the performance of banking agent entrepreneurs: *A case study of Co-operative Bank Co-op Jirani in Kibera, Nairobi*. International Journal of Social Sciences and entrepreneurship, accessed online from; <http://www.ijssse.org/articles/ijssse> on Accessed 12th Feb 2015
- Omwansa, T. K. & Sullivan, N. (2012).*Money, real quick: Kenya's disruptive mobile-money innovation*. London: Guardian Books
- Omwansa, T.K. & Waema, T.M. (2014). *Deepening financial inclusion through collaboration to create innovative and appropriate financial products for the poor*. Nairobi: Kenya Bankers' Association. Available online from: <https://www.kba.co.ke/downloads/Working%20Paper%20WPS-06-13.pdf>
- Prahalad, C., K. & Stuart L., H. (2002). The fortune at the bottom of the pyramid. *Strategy Business*, 26: 13-23.
- Saropa, J.W. (2013). *Adoption of Agency Banking by Equity Bank Kenya Limited in its International Business Operations*. Unpublished MBA Project, University of Nairobi., Kenya
- Saunders, M., Lewis, P., & Thornhill, A. (2003) *.Research Methods for Business Students (3rd Ed.)*.Harlow: Financial Times, Prentice-Hall.

- Schumpeter, J.A. (1942). *Capitalism, Socialism and Democracy*. New York: Harper and Brothers.
- Siddik, N.A. Sun, G., Yanjuan C. & Kabiraj, S. (2014). Financial Inclusion through Mobile Banking: A Case of Bangladesh. *Journal of Applied Finance & Banking*, 4 (6),: 109-136.
- Singh, A.B. & Tandon, P. (2012). Financial Inclusion in India: An Analysis. *International Journal of Marketing, Financial Services and Management Research*, 1(6), 41-54.
- Sirken (2009). *Ministry of Finance audit findings on M-PESA money transfer services*. <http://kenyapolitical.blogspot.com/2009>.
- Stewart, J. (2002). *Data Collection Methods in Training and Development: Tutorial hand out*. Noringham: The Noringham Trent University Press.
- Taylor, W. & Maithya, H. (2007). *Urban families under pressure in Kenya and the Impact of HIV/AIDS: Working paper 2*. Birmingham, UK: University of Birmingham
- Thorat, U., (2007). Financial Inclusion–The Indian Experience. Speech delivered at the HMT-DFID Financial Inclusion Conference, London, 19 June. Available online from: <https://www.bis.org/review/r070626f.pdf>
- Thorat, Y.S.P. (2006). *Indian Banking: Shaping an economic power house*. Speech delivered at Banking Conclave.
- UN Habitat (2007). UN Habitat and the Kenya Slum Upgrading Programme. Available online from: www.unhabitat.org Retrieved on: March 2009.
- UN Habitat (2008). *The State of African Cities: A framework for addressing urban challenges in Africa*. Nairobi: UN-HABITAT

United Nations, (2006).*Building inclusive financial sectors for development*. New York: United Nations.

Vutsengwa, R. M. & Ngugi, K. (2013). An assessment of the challenges facing commercial banks in sustainability of agency banking in Kenya: A case of commercial banks, *International Journal of Social Sciences and Entrepreneurship*, 1 (2), 613-620.

Wambua, S. M. & Datche, E. (2013). Innovative Factors That Affect Financial Inclusion in Banking Industry. A Case Study of Equity Bank Mombasa County, Kenya. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 12 (1), 37-56.

APPENDICES

APPENDIX 1: INTRODUCTION LETTER

JOSEPH KELI

P.O.Box 23833 – 00100

NAIROBI

Dear Sir/Madam,

I am a student at Moi University pursuing an Executive MBA degree in Finance. I am conducting a study on Effect of mobile phone technology on financial inclusion in Kitui County. The purpose of this letter is to request for your co-operation to provide information that will be useful for this study. Please note that this study is purely for academic purposes and all information you provide will not be used for any other purpose other than academic and will be kept strictly confidential. Your participation in this study is voluntary and you are free to withdraw at any time should you wish. However, if you are willing to participate in this study, you are kindly requested to fill in the questionnaire attached herewith. Please be as honest as possible and feel free to ask for clarification and/or translation incase a particular question is not clear.

Thanking you in advance for your participation in this study.

Yours faithfully,

Joseph Keli

APPENDIX II: QUESTIONNAIRE

INTRODUCTION

Dear Respondent,

Kindly read through the questions carefully and provide honest response while answering the questions. Please tick in the boxes where appropriate and fill the spaces provided.

SECTION A: GENERAL INFORMATION

1. What is your age bracket?

- | | | | |
|---------------|--------------------------|----------------|--------------------------|
| 20 – 29 years | <input type="checkbox"/> | 40 – 49 years | <input type="checkbox"/> |
| 30 – 39 years | <input type="checkbox"/> | above 50 years | <input type="checkbox"/> |

2. What is your gender?

- | | | | |
|------|--------------------------|--------|--------------------------|
| Male | <input type="checkbox"/> | Female | <input type="checkbox"/> |
|------|--------------------------|--------|--------------------------|

3. What is your highest level of education?

- | | | | |
|-----------|--------------------------|---------------|--------------------------|
| Primary | <input type="checkbox"/> | College level | <input type="checkbox"/> |
| Secondary | <input type="checkbox"/> | University | <input type="checkbox"/> |

4. What is your occupation?

- | | | | |
|---------------------|--------------------------|-----------------|--------------------------|
| Shop/Small trader | <input type="checkbox"/> | Casual labourer | <input type="checkbox"/> |
| Housewife | <input type="checkbox"/> | Domestic worker | <input type="checkbox"/> |
| Professional worker | <input type="checkbox"/> | | |

Other (please specify)

5. If you own a mobile phone, for how long have you been having a mobile phone?

- | | | | |
|------------------|--------------------------|---------------|--------------------------|
| Less than 1 year | <input type="checkbox"/> | 1 to 2 years | <input type="checkbox"/> |
| 3 to 5 years | <input type="checkbox"/> | 5 to 10 years | <input type="checkbox"/> |
| Over 10 years | <input type="checkbox"/> | | |

6. Which Mobile Network Operator have you registered with?

- | | | | |
|-------------------|--------------------------|-------------------|--------------------------|
| Safaricom network | <input type="checkbox"/> | Orange network | <input type="checkbox"/> |
| Airtel network | <input type="checkbox"/> | multiple networks | <input type="checkbox"/> |

Other use (please state).....

7. How do you send and receive money?

Banks Mobile Banking Online Banking

Others.....

8. Why do you prefer the method in 7 above?2

Convenience Security Speed Simplicity

FINANCIAL INCLUSION SERVICES	Strongly Agree	Moderately Strongly	Neutral	Moderately Weakly	Weakly
Payments services					
Savings					
Deposits and withdrawals					
Micro loans					

SECTION B: FINANCIAL INCLUSION

For the following statements indicate your level of agreement on level of inclusion of the mobile financial services

SECTION C: EASE OF ACCESS TO MOBILE SERVICES

9. Kindly indicate your level of agreement on the statements

(Strongly Agree- 1, moderately strongly -2, Neutral- 3, moderately Weak - 4,

Weak -5)

SERVICES	1	2	3	4	5
Price of phone is prohibitive					
Mobile network is not always available					
There is a language barrier					
Those services are not enabled on all phones					
I don't trust the mobile network vendors					
Requires technical knowledge in using mobile phone					

SECTION D: QUALITY OF MOBILE PHONE SERVICES

10. Kindly indicate your level of agreement on the statements

(Strongly Agree- 1, moderately strongly -2, Neutral- 3, moderately Weak - 4, Weak -5)

SERVICES	1	2	3	4	5
Easy and convenient way than banking halls					
Easy to withdraw any time					
Offers a safe place to save my money					
Helps me to avoid unnecessary spending					
Transaction is fast and quick					
Transaction cost is not prohibitive					
Mobile network is stable					

SECTION E: CHOICE MOBILE NETWORK OPERATOR

1. Kindly indicate your level of agreement on the statements.

SERVICES	1	2	3	4	5
Stability of network while undertaking transactions					
Offers fair pricing during transactions					
Helps me to avoid unnecessary spending					
Offers an easy to learn transaction mode.					
Offers a variety of product that makes it convenient					

SECTION F: FINANCIAL PRODUCTS OFFERED

11. Kindly indicate your level of agreement on the statements. **(Strongly Agree- 1, moderately strongly -2, Neutral- 3, moderately Weak - 4, Weak -5)**

SERVICES	1	2	3	4	5
Offer savings products					
Offer better payment products at a fair price					
Offers fair pricing during transactions					
Offer credit fairly compared other provides					

12. In your opinion, do the existing regulations give you freedom to choose the mobile network operator for your financial services?

13. In your own opinion, do you think a mobile phone has become a good substitute for a bank?

THANK YOU FOR YOUR RESPONSES