

**INFLUENCE OF MOBILE LED FINANCIAL SERVICE  
COMPETITIVENESS ON FINANCIAL INCLUSION  
AMONG COMMERCIAL BANKS AND MOBILE  
SERVICE PROVIDERS IN KENYA**

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**Influence of Mobile Led Financial Service Competitiveness on  
Financial Inclusion among Commercial Banks and Mobile Service  
Providers in Kenya**

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**A Thesis Submitted in Partial Fulfillment for the Degree of Doctor  
of Philosophy in Business Administration (Finance) in the Jomo  
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## DECLARATION

This thesis is my original work and has not been presented for award of degree in any other university.

Signed..... Date.....

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This thesis has been submitted for examination with our approval as the University Supervisors.

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## DEDICATION

Glory to Almighty Lord God the Highest. My dear parents, Dad Sylvester Nyagilo Obare and the Late Mama Helidah Aluoch Kumama Nyagilo who valued knowledge and industriousness. Had it not been for you Mum, the two years in seclusion under your loving and stern surveillance, I would not have achieved the God's gift entrusted in me. To my children Antoinette, Eliud, Alandra and Aiden, the highway to acquisition of knowledge in whatever Almighty God Has gifted you is wide open in spite of the circumstances. What you require is patience, persistence, focus and never giving in, in pursuit of the God's gift. Further, as a word of encouragement, I wish to quote the late Prime Minister of a tiny state in the Middle East who at eighty-five years of age passionately championed innovation and start-up ventures with vision and knowledge only comparable to those who are four times younger in comparison to his age. In his wisdom, he said and I quote "*The most careful thing is to dare*" (Start-Up Nation by Dan Senor and Saul Singer). I therefore encourage you to always endeavour to dare. Finally, value the tiniest item that God brings into your life, love HIM and obey HIM, as everything is possible with HIM.

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## ACRONYMS AND ABBREVIATIONS

<b>AED:</b>	Academy for Educational Development
<b>AFI:</b>	Alliance for Financial Inclusion
<b>ANOVA:</b>	Analysis of Variance
<b>ATMs:</b>	Automatic Teller Machines
<b>B2C:</b>	Business-to-Customer
<b>BCG:</b>	Boston Consulting Group
<b>BI:</b>	Behavioral Intention
<b>CBA:</b>	Commercial Bank of Africa
<b>C2B:</b>	Customer-to-Business
<b>CCK:</b>	Communications Commission of Kenya
<b>CFI:</b>	Centre for Financial Inclusion
<b>CVI:</b>	Content Validity Index
<b>DOI:</b>	Diffusion of Innovation
<b>DRC:</b>	Democratic Republic of the Congo
<b>FAI:</b>	Financial Access Initiative
<b>FATF:</b>	Financial Action Task Force
<b>FICA:</b>	Financial Intelligence Centre Act
<b>GDP:</b>	Gross Domestic Product
<b>GSMA:</b>	Global System Mobile Association
<b>HIFIVE:</b>	Haiti Integrated Finance for Value Chains and Enterprises
<b>ICT:</b>	Information and Communication Technology
<b>IFC:</b>	International Financial Corporation
<b>MFI:</b>	Microfinance Institutions
<b>MMOs:</b>	Mobile Money Operators
<b>MMTs:</b>	Mobile Money Transfers
<b>MSE:</b>	Micro and Small Enterprise
<b>MTN:</b>	Mobile Telecommunication Network
<b>NFC:</b>	Near Field Communication

<b>NHIF:</b>	National Health Insurance Fund
<b>NSSF:</b>	National Social Security Fund
<b>PDF:</b>	Permanent Document Format
<b>PIN:</b>	Personal Identification Number
<b>P2P:</b>	People-to-People
<b>ROA:</b>	Return on Assets
<b>ROE:</b>	Return on Equity
<b>SEM:</b>	Structural Equation Modelling
<b>SMEs:</b>	Small and Medium Enterprises
<b>TAM:</b>	Technology Acceptance Model
<b>TCT:</b>	Transaction Cost Theory
<b>TRA:</b>	Theory of Reasoned Action
<b>UNCTD:</b>	United Nation Conference on Trade and Development
<b>UNWFP:</b>	United Nations World Food Programme
<b>US:</b>	United States
<b>USA:</b>	United States of America
<b>USAID:</b>	US Agency for International Development
<b>USD:</b>	United States Dollars
<b>WCCUT:</b>	World Council of Credit Unions, and Technoserve

## **DEFINITION OF TERMS**

- Competition -** Competition is concerned with how firm can outflank rivals and gain at their expense (Ketokivi & Mahoney, 2016).
- Competitiveness -** competitiveness is the ability of a firm to improve or protect its position in relation to competitors who are active in the same market (Aggarwal & Klapper, 2013)
- Efficiency of mobile led financial services:** This is the ability to accomplish financial transactions with the least waste of time and cost (Bowen, Morara & Mureithi, 2014).
- Financial Access –** It is concerned primarily with the ability to use available financial services and products from formal institutions. It focuses on the ownership and use of an account at a formal financial institution these include electronic money accounts for mobile transactions (Bansal, 2014).
- Financial inclusion -** Financial inclusion can be defined as ensuring access to appropriate financial products and services at an affordable cost in a fair and transparent manner (Clamara & Tuesta, 2014).
- Firm Size:** These are the dimensions and measures of a firm in terms of a firm's assets, sales revenue, turnover, or the average worldwide employee numbers of a firm (Faye & Triki, 2013).
- Pricing -** Pricing is the process whereby a business sets the price at which it will sell its products and services, and may be part of the business's marketing plan (Ishengoma, 2011).



**Service investment:** This refers to the purchase of goods and infrastructure that are not consumed today but are used in the future to create wealth (Jack, Ray & Suri, 2013).

## **ABSTRACT**

The aim of this study was to establish the influence of mobile led financial services competitiveness on financial inclusion among commercial banks and mobile service providers in Kenya. The study sought to determine the influence of pricing of financial services, service investment, firm size and efficiency of financial services on financial inclusion in commercial banks and mobile service providers in Kenya. The study adopted a positivism philosophy and a descriptive research design. The target population was 852 heads of departments and assistant heads of departments in the 42 Commercial Banks in Kenya and 6 mobile financial services providers. Stratified random sampling was used to select 384 respondents from the target population. The study employed a questionnaire to collect primary data. Secondary data was also obtained from the annual reports of financial institutions as well as the mobile led financial services. The study generated quantitative data, which was coded and entered into Statistical Packages for Social Scientists (SPSS Version 22.0) and analyzed using descriptive statistics and inferential statistics. Descriptive statistics included percentages, frequencies, mean and standard deviation. Inferential statistics such as Pearson correlation and regression analyses were performed to test the hypotheses of the study. The study found that pricing of mobile led financial services has a negative and significant effect on financial inclusion in commercial banks and mobile service providers in Kenya. The study also found that service investment has a positive and significant effect on financial inclusion in commercial banks and mobile service providers in Kenya. Further, the study found that firm size has a positive and significant effect on financial inclusion in commercial banks and mobile service providers in Kenya. In addition, the study found that efficiency of mobile led financial services has a positive and significant effect on financial inclusion in commercial banks and mobile service providers in Kenya. The study recommends that these institutions should continue investing in the establishment and maintenance of infrastructure supporting mobile led financial services. In addition, financial institutions should seek to increase their capital base by use of debts and selling of shares. This will help in financing the support of infrastructure related to mobile-led financial services. Also, commercial banks and mobile service providers should improve the efficiency of their mobile led financial services by reducing cycle time and response time as a way of increasing customer satisfaction and hence financial inclusion. On the regulatory challenges, there is need to include interfaces between different tiers of service providers (Banks and Mobile Operators), which in order to keep the public confidence in the system, the findings recommend certain level of clarity on who is who in terms of service delivery.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

With the increased globalization of the economy, the term competitiveness has become ubiquitous. Competition in the business world, as we know it today, is dynamic and challenging (Karimo & Ogbonna, 2017). Customers have become more aware of the competition that is taking place around them. The rise of the information age has educated individuals to search information of products and services, which has changed the market forces in many industries (Kithinji, 2017). The relationship between customers and companies has strongly developed to a direction where the customers have a dominating position in a sense of bargaining. With this power, customers have become more demanding towards service providers (Porter, 2008). One could state that many industries, including service industry, are under the mercy of their customers. Gaining competitive advantage in today's business service organizations is a very serious task for managers, because they need to find a way to deliver superior value to their customers. The big question is that, where should financial industry companies create their competitive advantage and what approach should be used to seek it?

Globally, 2.7 billion adults do not have access to formal financial services (Demirguc, and Levine, 2009). The Financial Access Initiative (FAT) found out that almost all of the 2.5 billion people in the world lacking access to financial services reside in Africa, Asia, and Latin America. Based on the population breakdown by income level, out of a population of 1.2 billion adults using formal financial services, a third, or 800 million people are in the lowest income category (i.e. living on under \$5/day). Apart from socioeconomic and demographic factors, the main drivers of inclusion were; an effective regulatory and policy environment and enabling the actions of financial service providers.

The level of financial inclusion is generally high in developed countries, but low in less developed countries. According to the World Bank (2017), 19% of adults in developed countries and a massive 72% of adults in developing countries don't have a bank account. Calculations have revealed that on an average half of the world's adult population is unbanked.

In the last one decade, there has been a growing effort to improve the world population's access to financial services, regardless of income, social, or cultural status. World leaders, especially those from developed countries, have committed to work toward improving access to financial services for the poor. The G20 summit in Pittsburgh USA in 2017 committed to work toward this objective by focusing on innovation and its lessons; promoting regulatory and policy approaches that encourage financial inclusion; and developing elaborate standards on financial access, financial literacy, and consumer protection (Karimo & Ogbonna, 2017).

Access to traditional consumer banking services, such as automatic teller machines (ATMs) and commercial bank branches, varies significantly across countries (Klein & Mayer, 2016). For instance, in Ethiopia there is less than one commercial bank branch per 100,000 people, while in Canada there are over 220 commercial bank branches per 100,000 people nation-wide (The World Bank, 2017). Especially in countries that have large unbanked populations, mobile technology has the ability to extend the reach of financial services.

In the wake of globalization, the concept of internationalization has allowed firms to compete across national borders. In an effort to enhance financial inclusion, Maimbo, Saranga and Strychacz (2011) notes that mobile financial services have facilitated remittance. International remittances are one of the largest sources of external financing in developing countries and often serve as a lifeline to the poor. However, the costs of transmitting money from abroad are often large and uncertain. Easing and improving international remittances will have significant development impacts, just as easing remittance transactions at the domestic level has done. Prices are high

because of underdeveloped payment systems infrastructure, inappropriate legal frameworks and the difficulty many migrants have obtaining identification in order to access finance; a lack of transparency, competition, and consumer protection has also kept prices high.

Maimbo, Saranga and Strychacz (2011) noted that mobile financial services could do much to ease this situation, but regulatory assistance and the creation of the appropriate payment systems infrastructure will be required. As such, mobile firms are concentrating on internationalization as a competitive move. Internationalization of mobile financial services seeks to lower the cost of transaction allowing more and more people to use the service for remittance services. Kendall and Maurer (2012) highlights that remittance have enhanced financial inclusion through mobile financial services as internationalization have allowed sending of money across borders.

All African countries have a high proportion of financially excluded people, which reflects a lack of access to and use of formal financial resources. The World Bank (2017) indicates that the low penetration of banking services indicates the high proportion of financially excluded people in Africa. In 2011, 54% of the South African population had accounts at formal financial institutions, while the statistics for Kenya, Nigeria, Egypt and the Democratic Republic of the Congo (DRC) were 42%, 30%, 10% and 4% respectively (World Bank, 2011). The level of financial inclusion in African countries is generally very low. 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 (World Bank, 2011).

Kappel (2010) study on South African mobile money found that while it had the potential to advance financial inclusion, it had not increased access to banking, especially compared with non-technological efforts, such as a particular type of bank account designed especially for the poor. In Nigeria, research has shown that financial inclusion would be enhanced if financial services are accessible to poor

people through mobile money services. Therefore, the population there stand a better chance of exiting the vicious cycle of poverty and income inequality (Kappel, 2010; Kendall, Mylenko, & Ponce, 2010). Improved financial inclusion is closely related to the objective of improving formal financial access. With South African laws it is not easy to open a bank account. FICA (Financial Intelligence Centre Act) requires that any person wishing to open a bank account needs a valid South African Identity book and a proof of residence.

In Tanzania, Donovan (2012) indicates that the rapid growth in access to mobile telecommunications in emerging markets has created new opportunities to provide secure, low-cost financial services using mobile networks thereby enhancing financial inclusion. Mobile phones have penetrated even the rural areas where the majority of the poor are living. Donovan (2012) notes that the rural poor had previously been considered unbankable; the emergence of mobile money transfer has thus improved financial inclusion in those areas.

Studies from Uganda indicates that efforts to enhance mobile financial services to improve financial inclusion has still been elusive. Mobile money service providers saw an increase in fraud cases, which led to loss of millions of dollars of revenue. The CIO East Africa (2012) reports of a fraud case with MTN Uganda mobile money in which staff of the company stole millions of dollars from mobile money users. This spell doom for mobile led financial services as clients loses trust with the services provider owing to security issues. This is despite the potential that mobile led financial services possess. Bansal (2014) predicted that worldwide mobile payment transaction values will be worth \$617 billion market value with 448 million users by 2016.

In Kenya, FinAccess (2009) survey reported that 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. However, Borg and Gall (2009) noted that the Mpesa services and other mobile led financial services are continuously increasing financial inclusion. They also noted that, predominant use of Mpesa is still for sending money, although some people use it for savings. Access and use of more sophisticated financial services such as savings, credit, and insurance could prove far more beneficial to the poor.

Mpesa and other mobile led financial services have collaborated with microfinance institutions (MFIs) to loan money at competitive rates, since cash transactions were more expensive. Based on the ease of access and use, Kenyans started using Mpesa more widely in day-to-day transactions. Once registered, customers can load money onto their phones at any agent by handing over cash at the counter. Similarly, customers can receive cash through their accounts at any Mpesa agent (International Finance Corporation, 2013). In 2016 there were approximately 79,000 agents and 18.2 million subscribers in Kenya (Kamana, 2017). In the same year, according to the Financial Times, Mpesa transactions accounted for 31% of Kenya's gross domestic product (Manson, 2014), which amounted to \$33.62 billion in 2016.

CAK first quarter sector statistics report for the financial year 2017/2018 (July-September 2017) reports that the number of active mobile transfer subscriptions and registered agents stood at 28.1 million and 184,537 respectively. In addition, a total of 537.2 million transactions (sending and withdrawals) were made during the period which was valued at Kshs. 1.65 trillion. Mobile commerce transactions which include Customer-to-Business (C2B), Business-to-Customer (B2C) and Business-to-Business (B2B) stood at 352.4 million and were valued at Kshs. 714.3 billion spent on buying goods and services. Additionally, Person-to-Person (P2P) transfers amounted to Kshs. 544.1 billion. M-Pesa services posted a market share of 80.8 per cent during the quarter under review. Equitel Money posted a market share of 6.8 per

cent while Mobikash stood at 6.3 per cent. Airtel Money and Mobile Pay Limited attained 5.8 and 0.3 per cent market shares respectively.

Most villages in rural Kenya have M-Pesa agents, hence M-Pesa plays an important role in increasing financial inclusion in the country. Prior to the launch of M-Pesa, only 19% of the Kenyan population had access to financial services. FinAccess (2013) reports that 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. Mobile money is often successful because it is considerably cheaper than other alternatives to cash. In an international comparison of 26 banks, Kithinji (2017) found that branchless banking (including mobile money) was 19 percent cheaper on average than alternative services. Mobile money could transform financial inclusion. “Where most financial inclusion models have employed either ‘credit-led’ or ‘savings-led’ approaches, the M-Pesa experience suggests that there may be a third approach-focusing on building the payment ‘rails’ on which a broader set of financial services can ride,” wrote the authors of one report (The World Bank, 2017).

Despite the increase in the number of licensed banks in recent years in Kenya, 32.7% of the population in Kenya still does not have access to banking facilities (Kihara, 2015). Due to this, several local banks included a focus on the unbanked population in their corporate strategies and this in turn has led to their growth and expansion. The introduction of financial services for the unbanked has attracted numerous competitors which include several local banks, foreign banks’ as well as deposit taking microfinance institutions (MFIs). However, an unexpected competitor in this sector was mobile phone companies. Several mobile phone companies have recently implemented a money transfer system that enables users to store money on their phones. Due to the relative ease in obtaining a mobile phone as well as their portability, there has been an increase in the number of people who store money in their phone due to the costs involved (Matta, 2015). This has led to competition in



mobile led financial services in Kenya with even the banks adopting the financial services. Due to these factors, it is therefore necessary for all players in mobile led financial services to search for innovative ways through which they can fight competitors while maintaining their focus of enhancing financial inclusion.

When focusing on the competitiveness of individual financial institutions, there are a number of things which represent competitiveness. Mas & Radcliffe (2010) notes that financial services competitiveness can be seen in terms of their efficiency, that is; rate of return on assets (ROA) and rate of return on equity (ROE) and its financial management. Further, financial services competitiveness can also be looked at from the perspective of size; market share (share of deposits and lending) and the size in terms of retail sales (number of branches, size of assets and deposits).

Claessens (2006) indicated that competitiveness in financial firm may be measured through service investment. Net investment refers to an activity of spending, which increases the availability of fixed capital goods or means of production. Net investment is the total spending on new fixed investment minus replacement investment, which simply replaces depreciated capital goods. This ratio helps to give a sense of how much money a company is spending on capital items used for operations (such as property, plants and equipment).

### **1.1.1 Global Perspective**

Though Mpesa may be the most publicized success story in mobile money thus far, Kenya is not the first country where mobile phones have made financial services more available to poor people. In the Philippines, where 75 percent of the country was without access to formal financial services in 2009, two mobile money services produced by communications companies predate Mpesa Smart Communications' SMART Money and Globe Telecom's GCASH Mobile were launched in 2001 and 2004, respectively (Kanika, 2012). Despite the widespread use of mobile money services as informal savings instruments, SMART Money and GCASH still do not

provide formal savings instruments. However, both SMART Money and GCASH now facilitate merchant payments and loan disbursements, in addition to both domestic and international remittance transfer services.

In July 2009, the US Agency for International Development (USAID), in partnership with non-profit organizations Academy for Educational Development (AED), World Council of Credit Unions and Technoserve (WCCUT), established the Haiti Integrated Finance for Value Chains and Enterprises (HIFIVE). Prior to the Haiti earthquake of 2010, HIFIVE had already instituted a Microfinance Sector Information and Communications Technology (MSICT) solutions working group to increase financial inclusion in Haiti (Asongu, S., & Asongu, 2018). After the earthquake, with two thirds of Haiti's banks destroyed, utilizing mobile financial services became an even bigger focus of HIFIVE. As the United Nations World Food Programme (UNWFP) is now doing in the Philippines, HIFIVE also used mobile network operators to facilitate transfers of funds for cash-for-work programs.

In Malaysia, Santiago *et al.* (2014), mobile banking offers opportunities to increase financial inclusion as it reduces operating and transaction expenses (such as time in which people would travel to carry out the transactions), as most mobile transactions do not currently have any cost for use. In Pakistan, the Boston Consulting Group (BCG) (2011) indicates that mobile financial services lower some of the key barriers to banking inclusion by reducing start-up costs and service prices, as well as by delivering the banking products that meet the particular needs of Pakistanis. In Bangladesh, the widespread network coverage allows for around-the-clock account access and eliminates travel time and costs.

In Bangladesh, Siddik *et al.*, (2014), indicate mobile banking gives customers access to additional products, such as credit and insurance policies, thereby breaking the chicken-and-the-egg cycle and providing Bangladesh's population with a much-needed opportunity to build credit histories. In Europe, Klein and Mayer (2016) indicate that since it lies at the interface between financial services and telecoms,

mobile banking also raises competition policy and interoperability issues. Finally, by unbundling payments services into its component parts, mobile banking provides important lessons for the design of financial regulation more generally in developed as well as developing economies.

### **1.1.2 African Perspective**

In various African countries, mobile banking has been successful in enhancing financial inclusion. In Zimbabwe, Mago and Chitokwinda (2014) found that the competitiveness of mobile banking in terms of efficiency and pricing enable the poor people to enjoy the same basket of financial services to rich people. The mobile banking system in Zimbabwe, as a result of investments by mobile money service providers, is ideal for the remote areas given that it is an easily accessible, cheaper, more convenient and faster means of sending and receiving money. In another study, Mutsonziwa and Maposa (2016) found that the growing use of mobile phones in transferring money and its efficiency and low transaction costs in making payments has significantly altered the country's financial inclusion landscape as millions who had been hitherto excluded can now perform financial transactions in a relatively cheap, reliable and secure way. The FinScope results found out that 45 per cent of the adult population use mobile money services. Of those using mobile money, 65 per cent mentioned that it is convenient, while 36 per cent mentioned that it is cheap. However, while some people are enjoying mobile money services, it is important to mention that there are still people who are excluded from the formal financial system.

In Nigeria, Yawe and Prabhu (2015) found that increasing financial inclusion should go beyond the traditional banking sector and this is because mobile network operators have, in most cases, initiated mobile money services, although this is not within the mandate for which they were initially licensed. As compared to commercial banks, mobile network operators have invested more in mobile money infrastructure. This has aided the provision of financial services to the majority

without bank accounts. Therefore, partnerships should be established between and among commercial banks as well as between mobile network operators providing mobile money services to fast track interoperability. In addition, David-West (2015) found that unlike banking, mobile telephony access and adoption has revolutionized traditional perspectives of financial access and inclusion. This has warranted regulatory changes and the introduction of a new cadre of financial service providers: Mobile Money Operators (MMOs).

In Madagascar, Riquet (2013) found that in the year 2010 only 5.2% of the adult population has an account at a formal financial institution. About 70% of Madagascar's population lives and farms in rural and remote areas, so reaching this group was essential. Two and a half years after launching the initial mobile money operations mid-2010, mobile money companies registered 1.7 million mobile money subscribers, exceeding the number of bank and MFI customers (1.4 million) by a quarter of a million people. In Tanzania, Ishengoma (2011) found that mobile banking had played a major role in improving financial inclusion. As a result of mobile banking adoption, 79% of the population was using the Mobile banking system technology in accessing financial services in an easy way. This has been enabled by the heavy investment in mobile money infrastructure, mobile money agent's enrollment as well as efficiency and low transaction cost of mobile money.

### **1.1.3 Local Perspective**

Kenyan citizens, especially those in remote rural areas, have limited access not only to basic economic and social infrastructure but also to affordable financial services, such as payment facilities, savings, insurance or credit (Muthiora, 2015). Most Kenyan citizens were reported to be unhappy with bank services. This explains the easy switch to mobile money in both urban (low income) and rural areas. According to Ngugi (2015), mobile money transfer services have a positive effect on financial inclusion in Kenya. Mobile banking services contributed significantly to deepening financial markets mostly out of financial products related to mobile money. In

addition, mobile banking services have contributed significantly to financial access in Kenya.

Ouma, Odongo and Were (2017) found that availability and usage of mobile phones to provide financial services promotes the likelihood of saving at the household level. Not only does access to mobile financial services boost the likelihood to save, but also has a significant impact on the amounts saved, perhaps due to the frequency and convenience with which such transactions can be undertaken using a mobile phone. Both forms of savings, that is, basic mobile phone savings stored in the phone and bank integrated mobile savings are likely to be promoted by use of mobile phones (Ngugi, 2015). Thus, growing and deepening the scope for mobile phone financial services is an avenue for promoting savings mobilization, especially among the poor and low-income groups with constrained access to formal financial services.

Mutua (2016) reports that once mobile banking became prevalent in the region, financial inclusion rates have seen a rapid transformation. In fact, from 2006 to 2015, adults using formal financial services tripled. Those figures rose from 26.7 percent to 75.3 percent in that time. Most importantly, adults completely excluded from the financial fold dropped from 41.3 percent to 17.4 percent. A major change in the region came with Safaricom's M-Pesa. But M-Pesa, the report stated, had success because of Kenya's political and economic attitude, which was ripe for change. Essentially, the lack of affordable consumer choice paved the way for new solutions to create a new market. But this may not be the case everywhere. In addition, Mutsune (2015) indicates that M-Pesa allows ordinary Kenyans to send money across the country cheaply and reliably using a mobile device and it creates an environment conducive to the vibrant economic activity via aiding time-sensitive farming activities. However, despite Kenya being the pioneer of mobile banking, and increased growth of mobile money business, about 17.4% of the adult population in Kenya is still financially excluded.

## **1.2 Statement of the Problem**

Financial inclusion has an impact on economic growth by enabling localized development. As desirable as financial inclusion is, the concept faces unique demand and supply-side challenges that impede its development and consequent impact on a population (Mutua, 2016). While every bank is looking at innovation as a way of enhancing reach to its customers, enhancement of financial inclusion is still elusive (David-West, 2015). Banks are adopting innovative technologies to enhance financial inclusion like agency banking, introduce systems for payments which can better accommodate small value transfers like Near Field Communication (NFC) and mobile money services (Aker & Mbiti, 2013). Both local and foreign banks as well as micro finance institutions are placing a focus on the unbanked in order to enhance their customer base. Similarly, mobile phone companies grow their customer base through the ease of access to mobile phones as well as the ability for customers to store their money in their phones. However, despite these facts, millions of adult Kenyans remain unbanked. Jack and Suri (2014) argue that customers only accept financial services only if they are credible. Credibility is usually seen as a perceived quality. Perceived credibility is often divided in two sub-concepts; perceived trustworthiness and perceived expertise. Therefore, players in the field of mobile financial services are faced with a challenge of ensuring that their services are credible in the eyes of their consumers (Claessens, 2006).

Mobile led financial services in Kenya are particularly very important. Kamana (2017) noted that, by 2017, 23,018,500 individuals were mobile money users representing a 74% of the adult population. The average value per transaction was \$29.3. Accumulated balance of all mobile account as a percentage of total bank deposits was at 1.2% in the same period. There were 56 million transactions worth 142 billion in that period. Despite these attractive figures, as shown by United Nation Conference on Trade and Development (UNCTD) (2015), a whopping 35% of Kenyan adult population are totally financially excluded.

This figure had reduced as shown by a study in 2016 that indicated that 59% of the adult population in Kenya was found to be either completely excluded or utilizing informal methods. Evidently, these figures have certainly changed over the past few years as the uptake of mobile money has exponentially grown.

UNCTD (2015) noted that financial services play a catalytic role in the efficient allocation of productive resources thereby contributing to trade, investment and economic growth in Kenya. The sector is singled out as one of the key drivers of high growth identified in Kenya's Vision 2030. Therefore, for Kenya to achieve its Vision 2030, a lot is needed to close the gap of financially excluded population. Financial inclusion has still been very elusive especially due to the fact that Kenya is a developing country. The rapid uptake of mobile financial services in Kenya has demonstrated the potential of reaching the poor using mobile technology and thereby enhancing financial inclusion. The World Bank (2017) estimated that 46% of the population lives below the national poverty line. Access to formal financial services has however grown more in the urban areas; between 2012 and 2014, those accessible to formal banking services rose 12% while access in rural areas increased only from 17.6% to 21.2% in the same period.

With the rapid growth of the mobile phone usage at penetration level of 78.0% (30.7 million subscribers) Kithinji (2017), reports there is a potential that is yet to be utilized fully to ensure that a significant proportion of the population if not all have access to financial services. Institutions including banks, micro finance institutions, and utility service providers should thus take up that opportunity to align their product and technological investments base towards incorporating Mobile Money Transfer services in an effort to lock in increased users. As noted above, this opportunity is yet to be tapped as a significant proportion of Kenyan are yet to be financially included.

Mobile banking was developed from the concept of M-Pesa, which is a mobile phone-based money transfer, financing and microfinancing service, launched in 2007

by Vodafone for Safaricom in Kenya. It has since expanded to Afghanistan, South Africa, India and Romania, Albania and other parts of the world. Despite Kenya being the pioneer of mobile banking, financial exclusion among adults is still high in Kenya. According to the World Bank (2017), 75% of the adult population in Kenya had accounts, 30% had formal savings and 15% had access to formal borrowing. This implies that 70% of the adult population in Kenya does not utilize formal methods of saving and 85% have not access to formal borrowing. In addition, Ngugi (2015) found that the average formal financial access in Kenya is 35%, which is lower than that of Botswana (41%), Namibia (45%) and South Africa (63%).

Several empirical studies have been done locally that are related to financial services and financial inclusion. From a global perspective, Jack and Suri (2013) examined the impact of reduced transaction costs on risk sharing by estimating the effects of a mobile money innovation on consumption in Ghana and found that mobile money significantly impacts on the ability of a household to spread risks as a result of reduced transaction costs compared to households without mobile money. Oluwataya (2013) examined the banking the unbanked in rural Southwest Nigeria using mobile phones as mobile banks among farming households and established that when savings are made to a bank via mobile money, it provides a further mechanism to borrow funds based on savings.

In Kenya, Ngugi (2015) carried out a study on the relationship between mobile banking and financial inclusion and established that mobile money transfer services have positive effect on financial inclusion in Kenya. Mwendwa, Makokha and Namusonge (2016) conducted a study on the effect of mobile banking on customer satisfaction in selected banks in Trans-Nzoia County and found that mobile banking has managed to change the way banking used to be conducted and therefore concluded that mobile banking is key for the socio-economic development of the Kenyan community at large. Ouma, Odongo and Were (2017) conducted a study on mobile financial services and financial inclusion and established that availability and



usage of mobile phones to provide financial services promotes the likelihood of saving at the household level, which increases financial inclusion. However, despite the massive inquiry in to the field of financial inclusion and financial services, none of the studies known to the researcher sought to establish the influence of mobile led financial services competitiveness on financial inclusion in Kenya. This study focused on the influence of pricing, service investment, firm size and efficiency on financial inclusion among commercial banks and mobile service providers in Kenya.

### **1.3 Objectives of the Study**

This study was guided by the following general and specific objectives.

#### **1.3.1 General Objective**

The general objective of the study was to establish the influence of mobile led financial services competitiveness on financial inclusion among commercial banks and mobile service providers in Kenya

#### **1.3.2 Specific Objectives of the Study**

The specific objectives of the study were:

1. To establish the influence of pricing of mobile led financial services on financial inclusion among commercial banks and mobile service providers in Kenya
2. To determine the influence of service investment on financial inclusion among commercial banks and mobile service providers in Kenya
3. To examine the influence of firm size on financial inclusion among commercial banks and mobile service providers in Kenya

4. To assess the influence of efficiency of mobile led financial services on financial inclusion among commercial banks and mobile service providers in Kenya

#### **1.4 Research Hypotheses**

H0<sub>1</sub>: Pricing of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

H0<sub>2</sub>: Service investment has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

H0<sub>3</sub>: Firm size has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

H0<sub>4</sub>: Efficiency of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

#### **1.5 Significance of the Study**

This study made contributions to the existing body of knowledge by widening the scope of understanding the mobile led financial services' competitiveness in this evolving generation of financial technology and its influence on financial inclusion.

##### **1.5.1 Banks and Mobile Financial Services Providers**

The problem and its consequent solution is relevant for banks, other financial institutions and mobile financial service providers looking to target the unbanked. This study is particularly important as the majority of the unbanked live in developing countries like Kenya that lack sufficient availability of conventional banking infrastructure that is available throughout the nation. The study also is important to the stakeholders as it looks into innovative ways through which banks

and mobile financial services provider can increase their competitiveness through the use of innovative technology and strategies for the benefit of their customer's thus increasing financial inclusion.

An additional beneficiary in this research may include organizations (like banks) that are looking into entering strategic alliances with partners (mobile services providers) who operate in unrelated businesses so as to overcome competitive challenges. The research outcome will focus on factors that should be considered in the alliance formation and management so as to build an alliance that meets the set objectives despite the fact that their respective organizational objectives are not related.

Also, the study is relevant to banks and mobile financial services providers who are looking to enhance their competitive advantage and thus increasing their customer base. By focusing on investment in to cross border business (internationalization) the study will highlight the benefits that these institutions may get by developing infrastructure that allows global (diaspora) remittance. This is also important to the government of Kenya as this will contribute to economic growth.

### **1.5.2 Policy Makers**

To policy makers, the results of the study are important, as they highlight areas of competition that organizations concerned should focus on. This is important to the policy makers as they draw policies that seek to regulate the businesses and ensure fair play.

### **1.5.3 Academicians**

Further, the study is important to scholars, as it contributes to the pool of knowledge thereby forming a reference material in the field of financial inclusion and financial services competitiveness. Also, the study identified empirical and methodological gaps in literature which future researchers may seek to fill. In addition, this study shows how theory of Financial Deepening, Technology Acceptance Model (TAM),

the Diffusion of Innovation (DOI) theory and Transaction Cost Theory can be utilized in the relationship between mobile led financial services and financial inclusion.

### **1.6 Scope of the Study**

This study sought to establish the influence of mobile led financial services' competitiveness and its influence on financial inclusion in Kenya. Specifically, the study sought to establish the influence of pricing of mobile led financial services, service investment, size of the firm and efficiency on financial inclusion among commercial banks and mobile service providers in Kenya. These variables were selected because Mago and Chitokwindo (2014) argues that the most common components of mobile led financial services including financial inclusion include efficiency, capability of a firm (size), pricing and service investment. The study was conducted in Kenya targeting all the 42 commercial banks and the 6 mobile financial services providers. The target population of this study was the heads departments and their assistants in the 42 commercial banks and 6 mobile money service providers. The study was conducted between January 2017 and March 2017.

### **1.7 Limitation of the study**

The limitations of a study refer to the characteristics of the research methodology or research design that can affect the interpretation of the study findings. The study made use of questionnaires to collect data. Questionnaires have low validity and there is no way of knowing whether the respondents are telling the truth. In addition, questionnaires depend on the respondents' ability to remember and hence are subject to recall bias. To mitigate this, validity and reliability of the instrument was used to determine whether what they indicated meets the required standard. Further, the collection of data through questionnaires depends on the respondents' willingness to answer the questions. The respondents in this study feared to fill the questionnaires due to fear of victimization. To mitigate against this, the researcher assured the

respondents that the information collection would only be used for academic purposes only.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents review of past literature. Specifically, this chapter will present theoretical review, conceptual framework; presenting literature on each of the independent variables in relation to the dependent variable. Further, the chapter presents critique of the existing literature, a summary and a research gap.

#### **2.2 Theoretical Framework**

This section presents theories that are relevant to the study. This study focused on Theory of Financial Deepening (TFD), Technology Acceptance Model (TAM), the Diffusion of Innovation Theory (DOI) and Transaction Cost Theory (TCT).

##### **2.2.1 Theory of Financial Deepening**

The argument that advocates that financial sector liberalization leads to financial development and eventually to economic growth is based on the theoretical framework and analytical underpinning by Ramo (2013). The concept of financial deepening is usually employed to explain a state of an atomized financial system, that is, a financial system which is largely free from financial repression. Financial deepening results from the adoption of appropriate real finance policy, namely relating real rates of returns to real stock of finance. Conversely shallow financial system is partly the consequence distortions in the relative process of finance. Financial intermediation of growth allows for financial deepening. Ho et al. (2018) contends that an increase in the real size of the monetary system will generate opportunities for the profitable operations of other institutions as well, from bill dealers to industrial banks and insurance companies. In its own right, financial depth contributes to growth by improving the productivity of investment. This linkage

corroborates further the positive role played by financial liberalization on growth (Yao, Wu, & Kinugasa, 2015).

It is well established that a vibrant, dynamic, and well-functioning financial sector leads to a host of improved economic outcomes, as surveyed first by Abosedra and Fakh (2017), then by Demirci Kunt and Levine (2009), there is a vast literature showing the benefits that accrue to countries in which financial development is greater. The proponents of the theory of financial deepening, Yao, Wu and Kinugasa (2015), highlighted the key role in economic development that could be played by a banking system free of the types of controls on interest rates and quantities that were prevalent at the time. In addition, Karimo and Ogbonna (2017), another proponent of theory of financial deepening, indicates that reveals that it is the necessity from high economic growth that creates demand in the financial sector. Thus, in this view, it is the improvements in the economy that drive higher demand for the use of money, which consequently promotes financial development. In other words, financial markets develop and progress as a result of increased demand for their services from the growing real sector.

As the literature progressed, it began to recognize that the financial system in general not exclusively banks performed four basic functions essential to economic development and growth: mobilization of savings, allocation of resources to productive uses, facilitating transactions and risk management, and exerting corporate control. Through these functions, a country providing an environment conducive to greater financial development would have higher growth rates, with much of the effect coming through greater productivity rather than a higher overall rate of investment.

The theory of financial deepening is used to explain the role of mobile money services in financial inclusion. Mobile money facilitates financial inclusion as a key variable of financial deepening which helps to address the basic issue of growth with equity. Large population mostly the low-income households and microenterprises do

not have ready access to financial services but they have access to mobile phones. Once people start using mobile money they become financially included and are likely to consider other financial products, such as a bank account or microfinance. Rapid growth in the mobile money industry, in particular, has led to increased access for the less privileged and the disadvantaged population to affordable financial services not only within, but also across borders (David-West, 2015). Financial inclusions across the world empower the underprivileged population who are a major driver of social and economic development. Money mobile agents act as financial intermediaries or banks branches since they have sufficient liquidity to satisfy consumers' needs to deposit and withdraw cash. This network of agents can expand the mobile operator's reach to rural areas in order to achieve a higher level of financial penetration in unbanked markets where there is no physical bank presence, essentially enabling a branchless payment system, outside the traditional bank-led business model.

### **2.2.2 Technology Acceptance Model**

Technology Acceptance Model is a theoretical model developed by Davis in 1989 and it evaluates the effects of things like system characteristics on user acceptance. TAM assumes that a computer user generally acts quite rationally and uses information in a systematic manner to decide whether to adopt, or not to use this technology in the workplace (Gefen & Larsen, 2017). Dixit and Prakash (2018) began with the TRA and adapted this as a basis for causal links between perceived usefulness, perceived ease of use, attitude towards using technology and behavioral intention to explain technology adoption.

Relative advantage refers to the degree to which an innovation is perceived as providing more benefits than its predecessor. Relative advantage results in increased efficiency, economic benefits and enhanced status Kamana (2017). Ashraf, A. R., Narongsak and Seigyoung (2014) have found that relative advantage of an innovation is positively related to the rate of adoption. Martens, Roll and Elliott



(2017) suggests that when user perceives relative advantage or usefulness of a new technology over an old one, they tend to adopt it. In the context of banking sector, benefits such as immediacy, convenience and affordability to customers have been reported.

TAM model, proposed is primarily intended to foretell users' acceptance of Information Technology and usage in an organizational perspective. By focusing on the attitude explanations of intention to use a specific technology or service, TAM model deals with perceptions as opposed to real usage, suggests while a new technology is presented to the potential adopter, two attitude-affecting factors, Perceived usefulness and perceived ease of use, influence their decision about how and when they will use it (Verma, Bhattacharyya & Kumar, 2018). One of the proponents of this theory is Workman (2007) and he argues that because new technologies such as personal computers are complex and an element of uncertainty exists in the minds of decision makers with respect to the successful adoption of them, people form attitudes and intentions toward trying to learn to use the new technology prior to initiating efforts directed at using. Other proponents improved the theory to form other theories.

As an extension of TAM, Fishbein and Ajzen proposed the Theory of Reasoned Action (TRA). The main point of this theory is that human behavior originates from their intentions and behavioral intention (BI) is a kind of cognitive activity which consists of two facets, namely attitude and subjective norm (Martens, Roll & Elliott, 2017). To sum up, according to TRA both attitude and subjective norm component of individual behavior is determined by salient belief.

Kappel (2010) indicates that principally Technology Acceptance Model TAM is used to test clients' intent to assent or to refuse the use of a particular technology and in this case cashless payments. The Technology Acceptance Model is important for this study as mobile money usage is becoming a serious channel of financial inclusion. Individuals to be served will use technology when they get knowledge of it and are

persuaded that it is good. Further, the technology should be evaluated as good when adopted by the users. Commercial banks have to make mobile money usage appealing to make it a driver of strategy with regard to expected performance, effort, social influence, and facilitating conditions.

### **2.2.3 The Diffusion of Innovation Theory**

The Theory of Diffusion of Innovation as described by Rogers is well known (Munjogu & Namusonge, 2017). Rogers describes diffusion of innovations as: “the process by which an innovation is communicated through certain channels over time among the members of social systems. It is a special type of communication, in that the messages are concerned with new ideas” (Love, 2003). Technology diffusion is an indispensable process through which technological potential of innovative activities can be actually turned into productivity. Various characteristics of the economic environment in which diffusion takes place may affect the pace of diffusion, while the diffusion itself may also have feedbacks on the environment. A decision not to adopt an innovation relates to the rejection of the available new idea. However, in order to explain the rate of adoption of innovations Rogers suggests measurement of the following perceived characteristics of innovations: relative advantage compatibility, complexity, trial-ability and observability. Love (2003) postulated that the adoption of innovations is influenced by these five characteristics, and that they can explain the rate of technology adoption.

Manning (2001), one of the proponents of this theory, defined complexity as the extent to which an innovation can be considered relatively difficult to understand and use. They found that complexity negatively influences the adoption of internet usage. Complexity is the opposite of ease of use. Ease of use refers to the extent to which mobile banking is perceived as easy to understand and operate. Merritt (2010), another proponent of this theory, suggests that there is a strong impact of perceived ease of use of new technology on its adoption. As banking services have very user-

friendly interfaces, users see them as easy to use, and hence to form positive attitudes towards them

Observability of an innovation describes the extent to which an innovation is visible to the members of a social system, and the benefits can be easily observed and communicated. Merritt (2010), another proponent of this theory, simplified the original construct by redefining observability into two constructs: visibility and result demonstrability. In the context of banking, observability is defined as the ability to access the banking services at any time and from any location without any delay or queue, and seeing the effect of banking transactions immediately, and conveying the accessibility benefits to others.

Diffusion of Innovation theory is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system (Yawe & Prabhu, 2015). The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. Adoption means that a person does something differently than what they had previously (purchase or use a new product, acquire and perform a new behavior). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible.

Adoption of a new idea, behavior, or product (innovation) for example that of mobile led financial services does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation.

#### **2.2.4 Transaction Cost Theory**

Transaction costs theory focuses rather strongly on the asset specificity and its role in determining how to better organize exchanges. The broad advice is that when assets are not specific to an exchange, the market may be the most efficient way (or the best way for minimizing costs) to organize it (Chibba, 2014). The asset specificity makes specific reference to the extent to which an asset can be redeployed to alternative uses and/or by alternative users without a substantial sacrifice of its productive value (Murthi, Steffes & Rasheed, 2011). And, it is possible to distinguish six different types of asset specificity: site specificity, physical asset specificity, human asset specificity, dedicated assets, brand name capital and temporal specificity (Mutsune, 2015). The degree of asset specificity ranges from nonspecific to mixed to idiosyncratic (Mutua, 2016). The asset specificity assumption might be called the locomotive or driving assumption of TCT as Williamson himself states “the importance of asset specificity to transaction cost economics is difficult to exaggerate”

If transactions are infrequent then the costs of alternative governance structures may not be justified. A larger frequency or larger volumes of transactions, however, gives rise to justification for alternative governance structures such as the firm (Clamara & Tuesta, 2014). Therefore, the volume, number, and/or temporal spread of transactions are important to be considered because even given the previous assumptions if they are infrequent alternative governance structures may not be necessary or feasible. The degree of frequency ranges from occasional to recurrent (Mwangi, & Sichei, 2013).

In sum, Ngugi (2015) highlighted three determinants of the transaction costs: (a) the agents’ bounded rationality, that originates incomplete contracts due to the impossibility of foreseeing, in the contracting moment, all future situations; (b) opportunism that is originated when one of the partners pursues his own short-term self-interest; and (c) the assets specificity, this originates that the owners of

production factors will incur costs if they deviate the assets to another use, and leads to the conclusion that the best use is improved by internalization (Demirguc & Klapper, 2013).

Ketokivi and Mahoney (2016), one of the proponents of the transaction costs theory, indicates that transaction costs theory rotates around organizational efficiency, showing how a complex transaction can be structured and governed so as to minimize waste. The efficiency objective calls for identifying the comparatively better organizational arrangement, the alternative that best matches the key features of the transaction. In addition, Alaghebanda, Rivard, Wu and Goyette (2011) indicate that the determinants of transaction costs are frequency, specificity, uncertainty, limited rationality, and opportunistic behavior.

The transaction cost theory is used to explain the pricing of mobile money as compared to the traditional banking. Low-cost banking can bring a considerable number of customers who formerly could be served only at a very high cost. According to Aggarwal and Klapper (2013), a transaction cost has a direct effect on consumer adoption if the cost is passed on to customers. Although the transaction costs of sending money through the mobile money technology are lower than those of banks and money transfer companies, still more people are adopting mobile banking especially due to its convenience which is a clear indicator that banks will continue to generate more profits from mobile banking services (Aduda & Kalunda, 2012). Customer usage of mobile banking is influenced not only by absolute prices but by the way a service is priced. Therefore, banks can compete on such service costs. For instance, some banks offer free deposit service which make branchless banking an affordable way to save while in others charge a customer small fee in form of airtime or service charge when performing bank transaction. Thus, depending on how much cost the customers incur determines whether they are willing to pay thereby affecting adoption of mobile banking. It is still not clear that lowering transaction costs will always be beneficial with regard to the banks performance.

### 2.3 Conceptual Framework

Conceptual framework is a diagrammatic presentation of a theory and is presented as a model when research variables and the relationship between them translate into a visual picture to illustrate the interconnections between the independent, intervening and dependent variables. The conceptual framework is the scheme of concepts this study will use to achieve the set objectives.

The researcher conceptualizes that the dependent variable of this study will be financial inclusion while the independent variables will be pricing of financial services, service investment, firm size and efficiency of financial services.

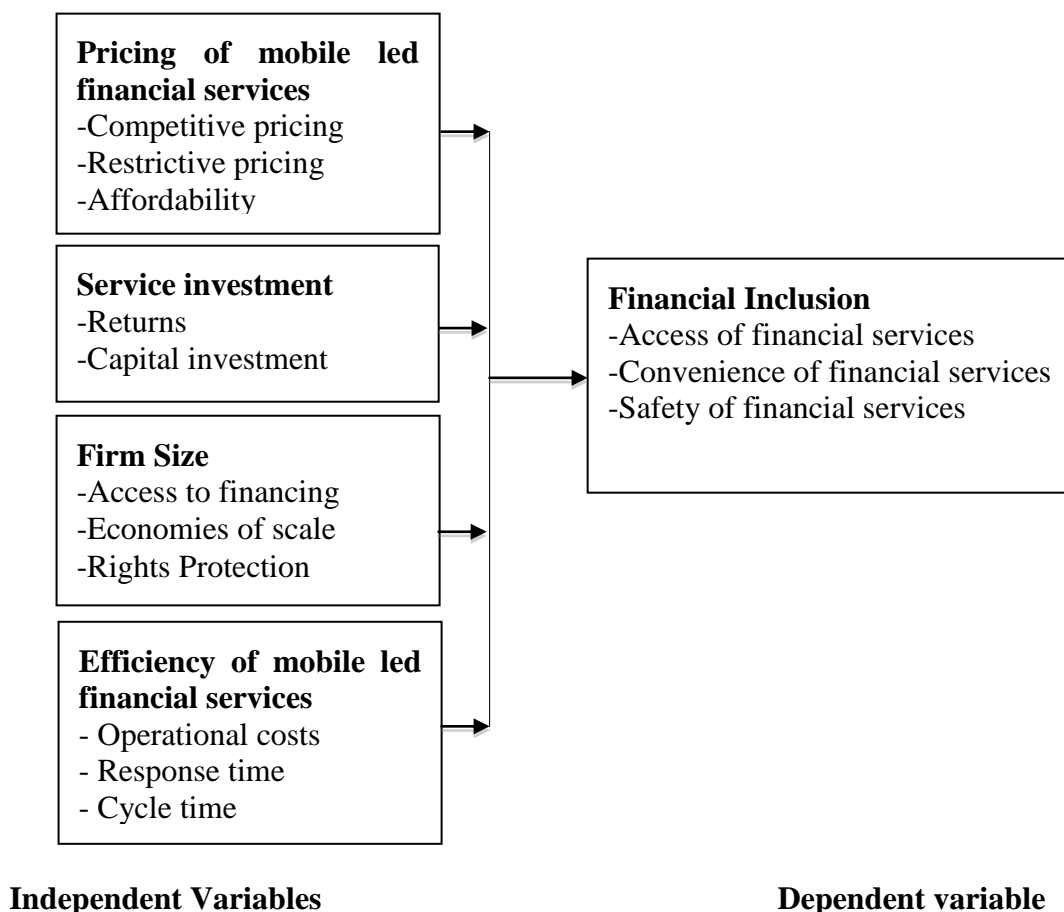


Figure 2. 1: Conceptual Framework

## **2.4 Empirical Review of Literature**

This section presents a review of literature on the independent variables (pricing of financial services, service investment, firm size and efficiency of financial services) and the dependent variable (financial inclusion) of the study.

### **2.4.1 Pricing of Mobile Led Financial Services**

The distinctive characteristics of services (intangibility, heterogeneity, perishability and inseparability) necessitate a closer look at the way at which services are priced. Renny (2013) suggests that pricing objectives falls under three main headings relating to their content (i.e. nature), the desired level of attainment and the associated time horizon. As far as their content is concerned, both quantitative and qualitative objectives can enter the objective functions of firms. The quantitative objectives can be measured easily and include those objectives that are related to the firm's profits, sales, market share and cost coverage. On the other hand, the qualitative ones are associated with less quantifiable goals such as the relationship with customers, competitors, distributors, the long-term survival of the firm and the achievement of social goals.

In Kenya, Vodafone and Safaricom created the mobile money product in 2007, and Mas and Ng'weno (2014) conducted a study on the three keys to Mpesa's success. Using a survey research design the study found that these successes include branding (Promotion), channel management (Place) and pricing (Price). Mas and Ng'weno (2014) point out that based on a survey, Mpesa user is actually more likely to have a bank account than being actually unbanked.

Mbiti and Weil (2013) conducted a study on the Home economics of E-money with a special focus on velocity, cash management, and discount rates of Mpesa users. The study adopted a descriptive research design. The results indicated that pricing for a new service needs to be understandable for the customer, and competitive against the

competing systems. Implementation of Mpesa has also decreased the prices of competing service providers.

International remittances are one of the largest sources of external financing in developing countries and often serve as a lifeline to the poor. However, the costs of transmitting money from abroad are often large and uncertain (Masita-Mwangi *et al.*, 2012). For example, according to World Bank data, the cost of sending money across the Tanzania-Kenya border was nearly 10 times the price of sending money from the United Kingdom to Pakistan in 2011. Maimbo *et al.* (2013) conducted a study on the opportunities and challenges of mobile money development in Africa. The study used a survey research design. The results indicated that prices are high because of underdeveloped payment systems infrastructure, inappropriate legal frameworks, and the difficulty many migrants have obtaining identification in order to access finance; a lack of transparency, competition, and consumer protection has also kept prices high. Mobile money could do much to ease this situation, but regulatory assistance and the creation of the appropriate payment systems infrastructure will be required.

Jack and Suri (2013) explored the impact of reduced transaction costs on risk sharing by estimating the effects of a mobile money innovation on consumption. The study adopted a cross sectional study design and found that mobile money significantly impacts on the ability of a household to spread risks as a result of reduced transaction costs compared to households without mobile money who are likely to suffer a drop-in consumption when hit by a negative income shock. Jack and Suri (2013) also indicate that the high cost of Mpesa transactions, which can amount to more than US \$1.00 for a round trip deposit and withdrawal transaction (though clients and institutions usually split this cost in some way), are a significant barrier for offerings where frequent small payments are necessary.

Mbogo (2014) set out to investigate success factors attributable to the use of mobile payments by micro business operators. The study is based on a survey conducted through administration of questionnaires. The data was collected from a sample of



409 micro business entrepreneurs in Nairobi, Kenya. Mbogo (2014) tested different variables including accessibility of mobile payment services, transaction costs, convenience and security, perceived support from mobile payment operators, satisfaction with mobile payment services, and actual usage of mobile payment and business performance. The study results revealed positive correlation between transaction costs and the behavioral intention to use the mobile payment services and actual usage.

Masita-Mwangi *et al.* (2012) examined the use of mobile money services among small and medium enterprises in Kenya. The study adopted a survey research design. The results indicated that mobile money services allow small retailers identified as mobile networks agents who operate from various places like small shops, kiosks or agent shop to act as bank branches by charging a small fee for each transaction. These mobile money fees are significantly less than fees charged by traditional services such as the bank and Western Union. It is actual fact that many people who previously did not have access to financial services may gain access to those services through mobile money as they receive or send money for the first time.

Chelogoi and Tum (2013) assert that the rapid growth of mobile payments technologies in the last few years, particularly in Kenya, South Africa, and the Philippines, has proven that there is latent demand for such services and that there is a willingness to adopt and pay for the technology among low-income users. At the same time, Bowen *et al.* (2014) offer that governments, banks and microfinance institutions (MFIs) have realized that extending financial services to the base of the pyramid via mobile technology can significantly lower the cost of delivery, including overhead costs for buildings and staffing branches, as well the costs to customers of accessing services (e.g., travel or queuing time, travel costs, security issues).

Omwansa and Waema (2012) carried out a study on the adoption of mobile money by the poor in Nairobi. The study adopted a survey research design. Structural Equation Modelling (SEM) was used to conduct a confirmatory analysis and test the

relationships between constructs. The results indicated that the transaction costs of sending money through the mobile payment technology are lower than those of banks and money transfer companies. The cost of a payment transaction has a direct effect on consumer adoption if the cost is passed on to customers. Transaction costs should be low to make the total cost of the transaction competitive.

Ndunge and Mutinda (2012) examined the relationship between mobile money services and poverty reduction among women groups in rural eastern Kenya. The study adopted a descriptive research design and the results indicated that cost of the mobile payments should be affordable to most of the micro business operators and far below what the banks normally charge for their bank transactions. There are many different mobile handsets, which are easy to operate, and have the functionalities required for the mobile payment technology.

Ndii (2014) examined the role of mobile banking in financial inclusion. The study adopted a survey research design and the findings indicated that the transaction costs of sending money through the mobile payment technology are lower than those of banks and money transfer companies. The cost of the mobile payments is affordable to most of the micro business operators and far below what the banks normally charge for their bank transactions. The reduced cost of transactions positively influences the intent to use mobile money services.

International Financial Corporation (IFC) (2014) reports that providers are excited about the ability of M-Pesa to facilitate low value transactions many of the innovative products linking to M-Pesa allow very small transactions but M-Pesa's fees are still too high to be viable for the client, especially the person to person fee which is over US\$0.40. Many providers cite this as a key barrier to reaching lower income clients who would prefer to risk storing the money at home or saving through other informal means rather than pay these fees.

Global System Mobile Association (GSMA) (2013) further reports that although M-Pesa transaction fees were cost effective when building the business, especially when compared with traditional retail channels, they are limiting the viability of smaller value transactions and thus limiting outreach to the poor. With Equity bank/Orange entering the market and Airtel Mobile money currently re-launching the Airtel money product, Safaricom may eventually face some pressure to reduce pricing on transfers.

**(a) Affordability**

Affordability is a basic determinant of product or service adoption. The affordability of money transfer service is a composite measure looking at the net effect of price and adoption of the money transfer service. How financial institutions price products and services across their integrated online and offline channels needs to be transparent and uniform. Financial institutions have commonly promoted bargain-priced online-only specials for basic credit cards and low-cost current accounts as an inducement for customers to purchase common financial products over the Internet (Dusansky and Koc, 2010). But financial institutions that continue to practice multitier pricing without convincingly demonstrating that the price at each channel presents a distinct value proposition for example, when charging a higher price for supplemental services provided by a financial adviser risk alienating customers when they discover different prices for the same products. As high-end retailers and big-box consumer electronics chains have learned, customers expect the same deal whether they encounter it on a website or on the showroom floor (Murthi et al, 2011).

Among many problems faced by the poor is very limited access to even the most basic financial services, including savings deposit accounts and the ability to make payments easily and efficiently. Over time, the lower costs and efficiencies associated with mobile transactions could change the economics of serving the underserved (Morawczynski & Pickens 2014).

Currently, customers use financial services that they find convenient, reliable and affordable that offers the right balance of liquidity (Mas & Morawczynski, 2009). World Bank report (2009) estimated that 3.5 billion people in the world who lacked access to formal banking services are finding their home in convenient cheaper financial services that are being provided by mobile money. Morawczynski and Pickens (2014) further affirm that mobile money networks have been identified by the majority as potential service conduits through which financial services can be extended to unbanked population. In addition, mobile money services have the potential to offer speedier and more cost-effective service delivery than the traditional commercial banks. The drastic increase in the number of people using mobile money could be attributed to above virtues. Financial institutions, too, need to present customers with the same price for the same product, whether they are at a smart ATM, seated at a loan officer's desk or using a digital tablet. Murthi et al, (2011) notes that, for financial institutions to succeed in the competitive business environment, they need to develop products that are affordable to their targeted market. They therefore need to check their prices against other alternatives that are at the customer disposal.

#### **(b) Competitive Pricing**

Regarding the desired level of attainment, pricing objectives may be divided into these objectives that endeavor to achieve maximum results (i.e. in terms of profits or sales) vis-a-vis those that pursue satisfactory results. However, it is interesting to mention in this point that the objective of "maximization" has been criticized by a number of different authors in the existing literature as being rather unrealistic to achieve. This may be attributed to the limited information that pricing managers might possess, the lack of communication inside the company or even the avoidance of government intervention that an excessive profitability could cause (Murthi et al, 2011).

With reference to the time horizon of attainment, pricing objectives may be distinguished between short-term and long-term ones. The short-term objectives endeavor to satisfy specific goals in a short time period (i.e. six months or one year), whereas the impact of the long-term objectives may only be realized after a long period of time. Moreover, the aforementioned authors have suggested that an excessive emphasis on short-term objectives may risk the long-term position of a firm in the market.

Firms' pricing strategies for introducing financial innovations such as the mobile led financial services must take into account the market forces that are at work during and following product launch. The nature of consumer interactions with each other through their social networks in the target market can further influence the diffusion process. The optimal introductory price of a financial innovation can also be affected by the speed with which competitors would be able to imitate the financial innovation (Dawes et al., 2009). Although some financial innovations present significant entry barriers to competitors owing to technological hurdles or investment requirements, other financial innovations can be easily copied by competitors. The optimal pricing also impacts the speed of the diffusion process (Murthi et al., 2011). Lower prices may lead to faster diffusion processes and therefore increase the market penetration of the innovator in advance of competitive entry to the market.

### **(c) Restrictive Pricing**

The optimal introductory price of a financial innovation can also be affected by the degree of price sensitivity evident in the marketplace. The unique nature of consumers' response patterns to prices in specific financial services markets may have strategic pricing implications that need to be considered when pricing financial innovations (Dusansky & Koc, 2010). Empirical studies show that consumer price knowledge and ability to comprehend prices can be limited in certain financial services markets, resulting in market responses that can challenge the traditional views of a downward sloping demand function. The nature of a market's price

response, as captured by the price elasticity of demand, can therefore influence the optimal pricing of new financial services.

The lack of ability to understand financial services offers and the associated prices has in some markets resulted in low levels of price sensitivity (Murthi et al., 2011). Consumers' inability to gauge the quality of some financial services can result in the use of price as an indicator of quality. This phenomenon reduces consumer sensitivity to price, as higher prices can be considered beneficial as they would be associated in the consumers' mind with higher levels of quality. This behavior is more evident in categories of financial services where objective quality can be difficult to establish, such as property-and-casualty insurance, life insurance and financial advisory services, and less evident in commoditized financial services, such as mortgages or credit products (Estelami, 2005).

The optimal introductory pricing of a financial innovation can also be affected by the length of time it takes for competitors to introduce their own financial solutions that match the capabilities of the innovation. Some financial solutions may be protected from competitive entry because of entry barriers (Murthi et al., 2011). Barriers to entry, such as technological hurdles, large upfront investments and patents, may prevent competitors from entering the market created through a financial innovation. For example, developing a payment network infrastructure to match that of Visa in the 1960s took competing firms over a decade (Manning, 2001). On the other hand, for some innovative financial services, entry barriers may be minimal. In cases where no major technological leaps are needed or investment requirements for launching products into a newly developed market are not high, early competitive entry is more likely to take place (Dusansky & Koc, 2010). Innovations in some sub-categories of insurance markets would be good examples, whereby similar insurance policies to those of the pioneer can be introduced by competitors who replicate the contractual terms of the pioneer's insurance product.

#### **2.4.2 Service investment**

In recent years, mobile money services have been extended to offer financial services for formal financial products (savings, credit, insurance), informal service providers (moneylenders), personal networks (on-demand, scheduled payments, sending and receiving money), in-store merchant payments (goods and services), and remote B2C/C2B payments (salaries, pensions, loan disbursements, bill payments, online/e-commerce) (Aker & Mbiti, 2013; Mbiti & Weil, 2013; Mbogo, 2014). Ndung'u et al., (2012) argues that governments have also started using mobile money transfer services for making payments to citizens (salaries and pensions) and to collect revenues such as taxes.

USAID (2015) reports that in Afghanistan policemen and other official's are paid their wages using a local version of M-PAISA. Vodacom Group Ltd. (2014) reports that Tanzania accepts tax payments through mobile-money services. In other countries such as India, it is being used to deliver welfare or social aid payments. M-money has also facilitated emergency response. In Haiti, for example, Thugge et al. (2014) found that following the 2014 earthquake, Voilà partnered with international aid agency Mercy Corps to provide virtual vouchers to victims through a cheap mobile phone loaded with an e-wallet from Indonesia's PT Telkomsel.

Ouma and Ramo (2013) examined the impact of mobile money on microcredit on women-owned small and medium enterprises. The study used a descriptive research design and found that the recent growth of mobile money has allowed millions of people who are otherwise excluded from the formal financial system to perform financial transactions relatively cheaply, securely, and reliably.

IFC (2013) conducted a mobile money product adoption survey in Kenya and found that mobile money has achieved the broadest success in Sub-Saharan Africa, where 16 per cent of adult's report having used a mobile phone in the past 12 months to pay

bills or send or receive money. The share using mobile money is less than 5 per cent in all other regions.

In Africa, the most visible case is Kenya, where according to the Economist (2015) active bank accounts increased in number from 2.5 million in 2007 to more than 17 million in 2014. Safaricom Limited (2014) report indicates that transactions through the mobile banking service Mpesa exceed USD 375 million each month and users save up to USD 3 on each transaction. A report on Mpesa reveals that between 2007 and 2014 the percentage of Mpesa users who were unbanked doubled (from 25 to 50 per cent) and the number living in rural areas also increased (from 29 to 41 per cent). Mpesa users are not just using the service to send and receive money but also for savings (Safaricom Limited, 2014).

The GSMA's annual report indicates that mobile money for the unbanked 2015, there were 140 live mobile money transfer systems in place in low- and middle-income countries targeting the unbanked in 2015 (GSMA, 2015) . Remittances and remote payments are the most common uses of mobile money in developing countries. For example, Mpesa, which markets its service as "Send money home", is used primarily for domestic remittances. The Economist (2015) reports international remittances are popular among Kenyans in the Diaspora with mobile money transfer enabling overseas workers to send money to their relatives. Consumers are using mobile money where there is a very clear, simple value proposition. Differences in the rate of adoption of mobile money services across markets are therefore dependent on what the user regards as being of value.

Aduda and Kalunda (2012) examined the utilization of mobile money systems in microfinance institutions. The study adopted a descriptive research design. The results indicated that insurance, credit, and savings services are now being developed atop mature mobile money systems. Kilimo Salama is a micro-insurance product that uses Mpesa to provide payouts to smallholder farmers whose crops fail. In its second year of operation, 12,000 farmers were insured, and 10 percent of those received



payouts of up to 50 percent of their insured inputs. Likewise, Equity Bank and Safaricom have partnered to offer M-Kesho, a mobile service that offers micro savings accounts, credit, and insurance. As individuals develop financial histories with mobile money, the ability to provide credit can expand because financial institutions will be able to analyze those histories and assign credit scores.

Mas and Morawczynski (2014) conducted a study on mobile money for the unbanked using a critical review of literature. The study opined that connecting Kenyan households to an electronic payment system for cash transfers would have considerable impact through reduced leakages, transaction costs, and overheads. It would also improve the government's ability to monitor financial flows, collect tax revenues, and reduce illicit activity. Government use of mobile money—such as salary disbursements—could prove to be an enormous driver of the service throughout the economy on the whole.

MasterCard (2012) offers that mobile money services represent a two-sided market, and new deployments must convince both agents (supply) and customers (demand) to sign up for the service in sufficient quantity to be viable. Building and properly incentivizing the agent network is no small task, and maintaining the necessary cash liquidity at the outlets can prove a constant challenge.

InterMedia (2014) argues that a majority of subscribers (99%) only use mobile money service to send or receive money; the remaining 1% using it for additional services including arranging for loans or credit. M-Banking in particular has been the potential to bring basic banking and electronic services to unbanked consumers. Mpesa from Safaricom has been studied in detail by Mbiti & Weil (2013) who observed certain patterns of usage. Even though the Mpesa is not used for money storage, it has this potential even though the primary purpose has been to send and receive money.

Access and use of more sophisticated financial services through mobile money services like savings, credit, and insurance could prove more beneficial (Donovan, 2013) even to SMEs. Mobile money services can also be viewed as a variation of branchless banking with the potential for delivery of financial services outside conventional banking. This observation made by Wambari and Mwaura (2014) can have a number of useful benefits to SMEs which include access to financial services like making deposits and savings, accessing the formal banking sector through mobile money services and many others.

Zutt (2014) explored the role of mobile banking on poverty reduction using a survey research design. The results indicated that savings via mobile money are expected to grow especially since most mobile networks are increasing mobile phone and bank collaborations that will enable mobile phone savers to earn certain benefits like interests and loans on savings. A good example is the Safaricom and Equity Bank introduction of a form of account called M-Kesho that can be accessed via Mpesa and pays an interest on savings. Similar products include M-Shwari which is a product between Mpesa and Commercial Bank of Africa (CBA).

Oluwataya (2013) examined the banking of the unbanked in rural Southwest Nigeria using mobile phones as mobile banks among farming households. A descriptive research design was used and data was collected from a random sample of 360 farming households in Ekiti and Osun States. The findings indicated that when savings are made to a bank via mobile money, it provides a further mechanism to borrow funds based on savings. Users can deposit funds in their mobile money accounts, save them for later use, and withdraw or transfer them via an agent or an ATM. Insurance on the other hand, Njuguna (2013) argues can help SMEs owners access various benefits previously unavailable to them like retirement benefits such as the National Social Security Fund (NSSF), health insurance like the National Health Insurance Fund (NHIF), business insurance and many others already seen in

Kenya. Access to small loans could enable people to pursue activities that would not only sustain their livelihood but also bring their families out of poverty.

The FinAccess National Survey (2013) also revealed that a significant group used Mpesa to buy pre-paid airtime directly from their accounts, and an intriguing 21 percent said that they used the service to ‘store money’. However, an analysis of inactive accounts showed that only 1.6 percent (60,000 out of 4 million) remained inactive for more than 30 days. The average residual amount held in these accounts after 30 days was just Ksh 1,468, or approximately US\$2. Kimenyi and Ndung’u (2014) concluded that sole proprietors and small businesses in Kenya benefited hugely from the mobile phone revolution, as they are able to make savings and gain access to more customers and new services.

Jack and Suri (2013) indicates that the key drivers for mobile money deployment in developing countries have been the rise in remittance services both local and foreign and the provision of financial services to the rural unbanked. Ndi (2014) concedes that although, mobile money is much associated with mobile payments, its most significant achievement to date is on the person to person transfer of funds and the provision of banking services to the unbanked. For example, in its initial usage, Mpesa (Safaricom mobile money services in Kenya) was characterized by person-to-person money transfer from the urban workers to their families in the villages.

#### **(a) Returns**

Mobile payment adoption is currently lower in more developed countries like the United States, where most people have banks accounts and the mobile phone is evolving as merely another payments delivery channel augmenting existing financial products and services. U.S. financial institutions have approached mobile financial services, including both banking and payment services, with caution due to concerns about limited opportunities for revenue, the complexity of revenue-sharing agreements with telecom firms, and the belief that mobile payments could

cannibalize existing electronic payment services, providing limited return on investment (EDC 2009). Telecom firms, on the other hand, have different incentives for engaging in financial services, namely, the ability to increase revenue from voice services by the addition of data transmissions, particularly in developed countries where mobile markets are reaching saturation levels (Bourreau & Verdier, 2010).

Most banks believe that the mobile channel will help them reduce transaction costs as well as increase customer engagement and retention; thus, enhancing profits. This is similar to the intended benefits of online banking several years ago. However, a Harvard study shows that while mobile financial transaction improved customer retention and reduced cost per transaction, it led to an increase in the total number of online and offline transactions that resulted in an increase in the total transaction cost (Dennis & Frei, 2010). While financial institutions in developed countries have been slow to offer mobile financial services because of the perceived lack of return on capital investment, recent pilot deployments signal this may be changing. Financial institutions have the opportunity to add value to customer depository services with the addition of mobile technology and realize customer retention benefits as a result (Dennis & Frei, 2010). Financial institutions are best positioned to employ risk management programs that ensure regulatory compliance for money laundering and other risks.

#### **(b) Capital Investment**

Financial organizations need to address shrinking profits by engaging customers in new ways to stay relevant, increase revenue and brand loyalty. The merchant network is an important source of revenue for financial services institutions. By leveraging the power of mobile context to understand the various characteristics of a customer's behaviors on their device, modern financial organizations can offer their customers special deals and promotions from the merchants they shop with the most, driving increased redemption and revenue for their business (Bourreau & Verdier, 2010). Customer service should be used as a competitive differentiator by financial

services institutions. As customers become more reliant and comfortable using their mobile devices to communicate with their banks and financial organizations, companies can realize increased cost savings by leveraging the channel to enhance their customer service strategy.

On their part, mobile operators may optimize their return on investment by connecting a maximum number of service providers, while service providers will be able to deploy their service quickly and easily, with just one intermediary giving them access to all customers (Beck & Demirguc-Kunt, 2006). Even though existing mobile money offers some encouraging benefits, such as increased transaction volume and customer retention, there must be a solid business case to launch the service. Payment revenues are declining rapidly because of increasing regulation. Achieving profit from the services may not ascertain profits for the mobile operators, as the small transaction charges will only prove their worth in high volume (Berger & Udell, 2006). The heavy costs arising from a large volume of transactions may overshadow revenue gains. Both service providers and retail outfits need justification for the infrastructure costs.

### **2.4.3 Firm Size**

IFC (2013) indicates that teaming up with Kenya Commercial Bank and Western Union, Mpesa has become a market leader, acquiring just under six million users — one in six Kenyans — since its launch in March 2007. The strong growth of Mpesa, reaching 35% penetration of its subscriber base, has helped Safaricom to enlarge its market share. Faye and Triki (2013) argue that five years later, Safaricom customer base growth can largely be attributed to the wide agency network across the country, Mpesa provides services to 15 million Kenyans (more than a third of the country's population) and serves as a conduit for a fifth of the country's GDP. Mpesa now processes more transactions domestically within Kenya than Western Union does globally and provides mobile banking facilities to more than 70 per cent of the country's adult population.

Donovan (2012) indicates that as mobile money providers have realized the importance of agents in their business models, four interlinked problems have emerged: profitability, proximity, liquidity, and trust. The agent model is founded on the exchange of cash through a franchise model, so the profitability of agents is vital for success. If the agent network grows too quickly and saturates the market, however, mobile money agents may not have sufficient transactions to remain in business.

Maimbo et al. (2013) examined the opportunities and challenges of financial sector development in Africa. Using a descriptive research, the study found that like other network industries, economies of scale and high barriers to entry could create uncompetitive market outcomes in the mobile money industry. In cases where a mobile money service is tied to a dominant mobile network operator (as in the case of Kenya's Safaricom, which has 68 percent of the mobile subscriber's market; see Communications Commission of Kenya 2011), that operator is at an advantage in dictating the terms of the product to ease access.

Zutt (2014) conducted a study on the relationship between mobile banking and poverty reduction in Ghana. Using a survey research design, the study found that the growth of mobile money services in Kenya has been particularly dramatic because it has overtaken the banking network in a very short time. This has been made possible through the expansion of financial agents who enabled growth to exceed the traditional banking outlets by a wide margin. For example, by August 2014, Mpesa had enlisted 12.6 million customers and nearly 20,000 agents countrywide compared to only 1510 ATMs and 1,030 banks and bank branches. The great number of mobile money agents located in almost all parts of the country has increased the convenience of the service which is one of the attributes that has resulted in increased number of subscribers.

The Mpesa success has further been attributed to the wide demography forming the Safaricom customer base. In this regard, the Alliance for Financial Inclusion (AFI)

(2014) reports that Safaricom has achieved penetration across all age groups which is a phenomenal achievement of new technology unlike others which often focuses on a certain age group. Despite this, older customers are more likely to use the service only to receive money. The usage is highest in subscribers between the ages of 25 to 29 and reduces thereafter. But even amongst the oldest Kenyan (above 65 years), half use mobile money.

On the other hand, women are less likely than men to use mobile money, and are more likely to only receive and not send funds, a finding by Zutt (2014). He further notes that in 2009, mobile money was initially concentrated among the wealthy in Kenya but has since grown rapidly to include the poor. Other demographic information related to mobile money usage indicates that it is highest among urban Kenyans, but with substantial penetration among rural residents. As of August 2014, 47% of rural Kenyan adults and 69% of urban Kenyan adults had used mobile money (Zutt, 2014).

Mbiti and Weil (2013) assert that Safaricom, being the most developed mobile phone payment system in the world holds promises for financial inclusion, employment opportunities and poverty reduction (Kamothi, 2014; Aker & Mbiti, 2014). For small firms and individuals, Mpesa has generated innovative uses ranging from sending pocket money and school fees to students, to paying loans, transport fees, and other bills. Mpesa is succeeding in Kenya because of mobile penetration, low transaction costs and a concerted drive to increase access to financial services (Jack & Suri, 2013). Though it is not a bank, Safaricom hopes that Mpesa would substitute for bank accounts and reach millions unbanked people.

Aker and Mbiti (2014) argue that the extensive coverage of mobile service providers as outlined above has not only resulted to high rates of convenience, but has made the service effective and reliable as a form to send money with the interface between agents and customers functioning with minimal complaints from customers. This is even so witnessed as the number of agents continues to increase as more

sophisticated banking services are added to the mobile money platform such as M-Kesho, M-Shwari and others. However, these added features will continue to require that the agents have some equipment's and literacy levels to continue support of these functions. With increased uptake of mobile phone services, more Kenyans have enrolled into a mobile money service.

Donovan (2012) explained that the adoption of Mpesa in Kenya was due to the interplay of reason, force, and chance. Reason is explained as the intrinsic meaning that a user derives from the characteristics of the technology and extrinsic meaning that comes from the attractiveness of being a member of a large network. Force, on the other hand, can be direct or indirect pressure on a user to adopt the technology. He explained that the effect of intrinsic meaning is pungent at early adoption stage whiles the network effect (extrinsic) is most effective at later stages of adoption. Jack and Suri (2013) carried out a survey of 3000 randomly selected households in Kenya, the largest survey on Mpesa so far. They concluded that the success of Mpesa is due to the rapid expansion of the agent network with the majority of the respondents having good experience with their agents. Their findings also showed the impact of Mpesa on its users indicating that 92 percent of users expect a large and negative effect from Mpesa shutting down.

The Economist (2015) reports that Safaricom's Mpesa has managed to overcome the "last mile problem" creating a network that connects over 70% of Kenyan households to the financial system (13.3m people, approximately 60% of all adults in Kenya). The Mpesa network handles more transactions in a year than Western Union does globally, and the value of transactions represents more than 15% of Kenya's GDP. Unlike other deployments around the world struggling to achieve scale, penetration is no longer the barrier limiting the platforms benefits (FinAccess National Survey, 2013).



### **(a) Access to Finance**

Extant literature associate firm size to the ability of firms to access finance. For example, Honhyan (2009) found that larger firms tend to be more diversified and fail less often, so size can be an inverse proxy for the probability of bankruptcy. Cassar (2004) argues that it may be relatively costlier for smaller firms to resolve information asymmetries with debt providers. Consequently, smaller firms may be offered less debt capital. In addition, transaction costs are typically a function of scale and may be higher for smaller firms. It is also possible that small firms have fewer opportunities to raise capital because capital markets are out of reach due to their size.

In the presence of non-trivial fixed costs of raising external funds large firms have cheaper access to outside financing per dollar borrowed (Aggarwal & Klapper, 2013). Size may also proxy for the volatility of firm assets, for small firms are more likely to be growing firms in rapidly developing and thus intrinsically volatile industries. Yet another explanation is the extent of the wedge in the degree of information asymmetry between insiders and the capital markets which may be lower for larger firms, for example because they face more scrutiny by ever-suspicious investors.

### **(b) Economies of Scale**

While economic theories have been preoccupied with the determinants of firm size and its optimality since Aker and Mbiti (2013), existing theories are silent on the effect of firm size on external financing. Bansal (2014) offers an alternative explanation for the relationship between firm size and profitability, arguing that the greater profits of large firms have little or nothing to do with conventional scale economies. Rather large firms are inherently more efficient than small firm's due to superior management. Consequently, overtime, the more efficient firms are rewarded with both growth and elevated profit. Again, profitable firms have higher access to

finance given the assurance it gives to the lenders on financial sustainability. More recently, Dun and Girma (2012) using firm level data from China spanning the period 1998-2005 found that bigger firms source capital from the bank while smaller firms use self-raised finance.

There may be variety of reasons for the lack of provision of appropriate products and services. Banks may have problems offering financial services to all households. It may be too costly to provide the physical infrastructure in areas of low population density or where there is a lack of security (Beck & Demirguc-Kunt, 2006). High transaction costs for small volumes are often mentioned as constraining financial service providers from broadening access. Small borrowers borrow frequently, for example, and repay in small installments. They consequently do not want financial products with high per unit costs, yet for banks costs are often similar regardless of transaction size (Beck, Demirguc-Kunt & Maksimovic, 2008). Households and firms in developing countries may seek financing or insurance for specific purposes (important life events such as marriage, healthcare, or specific crop insurance) for which contracts are difficult to design. Firms may be underserved for the same reasons. Small firms seek different products than large enterprises, such as payment services for small amounts, and banks may not consider these firms attractive as clients. Small markets may make it more difficult to develop or roll out new products specifically useful for these markets.

The fixed costs in financial intermediation thus make providing services for small clients, by small institutions, and in small markets hard. At the same time economies of scale lead to decreasing unit costs as transaction volumes increase, making some specialization attractive. Although better cost management can lower unit costs, there are limits to cost management at the level of an individual institution, as evidence on the economies of scale for banks in mature financial markets shows (Berger & Udell, 2006).

Numerous of articles show that small firms face higher financial obstacles than large firms (Love 2003). Unlike larger firms which can finance capital expenditures from internal resources, issuance of equity or debt, smaller firms are restricted in the extent of their internal earnings and the potential for issuing equity. Beck (2007) show that the difference in financial patterns between small and large firms reflects the different level of constraints they face. The lack of access to specific forms of financing such as export, long-term funding and leasing is much higher for small firms. Small firms use less than 10% of bank finance for their investments compared to more than 20% for large firms (Beck, 2007). Large firms have an advantage of easier access to credit and development funds, while small firms have to use more equity and informal sources of financing. The difference in size is also important when facing some additional financing obstacles such as collateral requirements, bank paperwork, interest rate payments, the need of special connections, and banks' lack of lending recourses. Beck and Demirguc-Kunt (2006) argue that age, size and ownership are the most important factors for financing obstacles. Large, older and foreign-owned firms have easier access to funding.

### **(c) Property Rights Protection**

The level of financial and institutional development has different impact depending on the size of firm. Better protection of property rights increases external financing of small firms significantly more than it does for large firms, particularly due to the differential impact it has on bank and supplier financing (Beck et al., 2008). Also, the higher level of institutional development can help in reducing the gap between small and large firms. The relationship between firm size and innovation is an up-coming issue in the industrial organization literature. Two counteracting factors seem to be working on their innovation effort. One, if the market competition is known to be a motivating force for innovation of a firm, the small firm would essentially do at larger scale. It is noteworthy to mention here that the greater competitive pressures

created by both globalization and advancement of information technology favour smaller firms and more flexible organizations that are conducive to innovation

#### **2.4.4 Efficiency of Mobile Led Financial Services**

The effectiveness is the indicator given by the ratio of the result obtained to the one programmed to achieve. The analysis of efficiency and effectiveness is about the relationships between inputs, outputs and outcomes. There is no efficiency without effectiveness, because it is more important to do well what you have proposed (the effectiveness) than do well something else that was not necessarily concerned. The relationship between efficiency and effectiveness is that of a part to the whole, the effectiveness is a necessary condition to achieving efficiency (Bourreau & Verdier, 2010). Further, profitability ratios are an indicator for the firm's overall efficiency. The ratios of the return on assets (ROA) and the return on owner's equity (ROE) are the most used profitability ratios in the analysis.

Okutoyi (2013) examined the impact of mobile money services on the performance of small and medium enterprises in an urban town in Kenya. The study used an exploratory research design. The results demonstrated the effects of using mobile money in the improvement in information flow between transacting parties allowing efficiency between the trading without travelling. This was noted particularly for users in rural areas where traders would have needed to travel to urban areas to send and receive money. Hence, mobile money usage results in the reduction in transportation cost and consequently increased consumer surplus.

Njenga (2014) examined mobile phone banking Usage experiences in Kenya using a descriptive explanatory research design. The study found that mobile communication networks enable information to move freely, enabling markets to be more efficient thereby unleashing entrepreneurship and consequently leading to financial innovation that allows mobile phones to be used as gateways to financial access by the previously unbanked rural communities. There are also relational benefits that

accrue between transacting parties eliminating the need for middlemen, as a result it shrinks information asymmetry and increases the frequency of transactions and redress market inefficiencies. Other studies of Mpesa in low-income areas found that the risk of muggings declined, because cash was less evident. Because it is less visible than cash, mobile money also has consequences for privacy and autonomy (Ndunge & Mutinda, 2012; Ndung'u et al., 2012).

Using a survey research design, Donovan (2013) looked at Mpesa in Kenya in an attempt to find the impact it had on human freedom. He concluded that a relationship of networks of social interactions, the need and desire to coordinate financially with friends, relatives and businesses, and progressive desertion of other alternatives like banks and Western Money Union lead to a form of power that acts on all Kenyans both users and non-users of Mpesa.

Mutua and Oyugi (2012) offer that given access, financial services can help poor people forge their own paths out of poverty in two primary ways: First, they enable one to obtain through savings or credit sums of money large enough to invest in income generation and asset creation (for example, through enterprise, housing, education or training which improves one's job market prospects, and so on). Second, they help reduce vulnerability to unexpected events such as accident, illness, theft, or drought. These benefits represent the gains of MMTs to SMEs.

Using a descriptive research design, Mbogo (2014) conducted a study on the impact of mobile payments on the success and growth of micro-business. The results indicated that efficient and affordable money transfer and payment services are an important financial service most people require, including those who do not typically use financial or banking services. The Standard Media (2014) reports that mobile money transfer has turned out to be efficient and affordable and is therefore preferred by many people, Micro enterprise operators are in the Micro and Small Enterprise (MSE) Sector.

Vodafone (2014) reports that the extensive coverage of mobile service providers has not only resulted to high rates of convenience, but has made the service effective and reliable as a form to send money with the interface between agents and customers functioning with minimal complaints from customers. This is even so witnessed as the number of agents continues to increase as more sophisticated banking services are added to the mobile money platform such as M-Kesho, M-Shwari and others according to CCK 2011/2012 Report. Literature review by Jack and Suri (2013) reveals that the mobile money is faster, cheaper, more reliable, and safer. The benefits of cashless transaction including less opportunity for fraudulent and criminal activities, and mobile money technology have increased adoption rates among SMEs in the capital city (Mbogo 2014).

Using an exploratory research design, Omwansa (2014) examined the progress and prospects of Mpesa. The results indicated that a lost or stolen mobile phone does not mean catastrophe as no one can access an Mpesa account without a correct personal identification number (PIN). He further explains that in a country where majority of people have no bank accounts, Mpesa provides both convenience and safety. People walk around with their virtual money knowing they can withdraw cash any time at a minimal fee. In a mobile environment, it is necessary to have perceived security and trust in the vendors and the payment system (Chibba, 2014).

Omwansa (2014) also indicated that the micro-business operators go to the bank less often and spend more time running their businesses. Equally, many unbanked Kenyans can now receive or send money wherever they are in the country. Majority of the micro business operators are familiar with the use of the mobile payment services as they are easy to use and require no formal training before use.

The Bill and Melinda Gates Foundation (2014) report that security and safety of mobile payment transactions is one of the primary concerns for users. They state that safety represents no delay, no transaction in completeness and no private information disclosure during payment transactions. Safaricom limited (2013) offers that the use

of the pin and secret code for the Mpesa transactions enhances the security and privacy issues. Key requirements for any financial transaction in an electronic environment should include confidentiality, authentication, data integrity and non-repudiation. Other security factors important to the users are anonymity and privacy, which relate to use of policies of customers' personal information (Ondiege, 2014).

Mwangi and Sichei (2013) add that equally, many unbanked Kenyans can now receive or send money wherever they are in the country. Majority of the micro business operators are familiar with the use of the mobile payment services as they are easy to use and require no formal training before use. With more time in the business, more customers are served leading to increased sales and therefore increased financial inclusion.

Mas and Radcliffe (2014) argue that the rapid deployment of telecommunication infrastructure throughout the developing countries meant that the rural areas were being reached. The mobile operators and their distribution channels were reaching the remote parts of the countries. This meant that more and more places where it was not profitable to build a retail bank, now have access to mobile phone and the operators' distribution networks; thus, making it possible to extend financial services to large segments of the unbanked poor people. The instantaneous transfer that takes place when a consumer purchases the electronic value instills some confidence in the mobile money transaction.

Even when the M-Pesa was not designed for the store of value, increasingly sophisticated consumer demand drove the development of new services (Kusa & Ongore, 2013). Safaricom introduced a fully integrated mobile savings system, referred to as M-Kesho, to M-Pesa users in Kenya. Until M-Kesho was introduced in 2011, the only form of savings on M-Pesa was the basic mobile savings. Jack and Suri (2013) reported a significant number of M-Pesa users using it to store value. However, Mbiti and Weil (2013), posit that although a significant number of survey respondents indicate that they use their M-Pesa accounts as a vehicle for saving, their

analysis of aggregate data suggests that the overwhelming use of M-Pesa is for transferring money from individual to individual, with extremely little storage of value. The greater part of users cites ease of use and security as the most powerful motivation for saving on M-Pesa.

**(a) Operational costs**

The addition of mobile phone technology has improved the efficiency of financial transactions and reduced operational costs, providing more frequent opportunities to open and access member accounts in real time during field officer visits (Fawzia, 2009). Mobile led financial services have a number of security requirements that are requisite for the effective and efficient functioning of the systems. These requirements are necessary for making the handling of transactions on mobile led financial services platforms more secure and they include, confidentiality, authentication, integrity and non-repudiation.

If mobile led financial services and other electronic channels become a primary method for conducting day-to-day transactions, branch resources could be transformed to handle more services that are likely to require one-on-one interactions, including managing complex services and cross-selling products (Ghosh, 2013). For financial institutions with a focus on serving underserved consumers, an increase in Mobile Financial Services (MFS) could also present opportunities for banks to use resources more efficiently to better engage underserved consumers through one-on-one interactions that provide information on available products, or on how to use lower-cost channels for everyday transactions (Honhyan, 2009). Restructuring branches could provide banks an opportunity to improve efficiency but also better meet the needs of customers and do so in way that blends technology and personal relationships.



## **(b) Response time**

Mobile led financial services eliminates the time as well as space shortcomings from banking operations like, balance inquiry and fund transfer from one account to another account without visiting bank branches (Mishra & Sahoo, 2013). Mobile banking enhances efficiency, offers access to financial and banking services, generates new opportunities for income generation and improving governance and give poor people a voice. It is required for each country which wants to adopt m-banking for increasing economic development and creation of wealth to produce an informed m-banking development strategy for main streaming Mobile banking services in the productive sectors as a matter of economic survival. Using mobile technology has therefore been contributing in improving efficiency of banks, and financial inclusion.

The ability to make payments may seem to be a trivial aspect of financial system but has fundamental implications for financial development and inclusion (Klein & Mayer, 2011). A large portion of the population in the developing world still does not have access to any organized and mainstream system of making payments and thus relies solely on inefficient cash-based methods. Fortunately, with the rapid growth in wireless communication, there is now a tool available to begin to solve this problem and increase financial inclusion. Allowing mobile network operators to operate in financial services space is all about enabling a competitive market place in which innovation is rewarded and providing basic financial services to millions of unbanked people efficiently and conveniently being the central agenda.

Mwendwa, Makokha and Namusonge (2016) conducted a study on the effect of mobile banking on customer satisfaction in selected banks in Trans-Nzoia County. A descriptive survey research design was adopted. The target population was ten selected banks in Trans-Nzoia County. The results showed that mobile banking had brought in efficiency, responsiveness (promptness and feedback), reliability (time

and quality), accessibility (continenence and location) and security to the customers together with the banking institutions and fraternity as a whole.

### **(c) Remittance**

Global System Mobile Association (GSMA) (2015) asserts that the mobile remittance industry is burgeoning owing to the increased penetration of mobile phones in remote regions and the mushrooming of various remittance service providers, both national and international, for global money transfers. The World Bank (2013) argues that remittance flows to developing countries grew from USD 372 billion in 2011 to reach USD 473 billion in 2014, and total worldwide remittance flows reached USD 615 billion in 2014. India and China rank highest as recipients of migrant remittances, to the tune of USD 64 billion and USD 62 billion respectively.

Tajikistan and Lesotho receive remittances that are as high as 31 per cent and 29 per cent of GDP respectively. Various money transfers options (phone to phone, cash to phone, phone to cash, mobile-wallets etc.) can be made conveniently using mobile devices through platforms and applications provided by various banking institutions and money transfer operators worldwide (World Bank, 2017). Various money transfer operators provide services either through a network of agents or partnering with banking institutions depending on the regulations of the central bank and other financial bodies of various nations

Okutoyi (2013) indicates that Mpesa has been compared against the alternatives and in surveys 96-98% of the respondents consider that the service is quicker, safer, cheaper, and more convenient (Mas & Radcliffe, 2014). Prior to Mpesa deployment, 58% of money was moved by hand, whereas after the implementation of Mpesa, the amount of money sent by hand was reduced to 32%, while Mpesa captured a share of 47% (GSM Association, 2013). Alternative competing methods were formal domestic money transfer, i.e. remittance, through Western Union, Post PostaPay, and MoneyGram, which were also competing against the informal methods, such as

delivering money from hand to hand by a friend or e.g. a bus driver (Wambari & Mwaura, 2014).

Siringi (2013) reports that mobile money service allows users/customers to benefit from remittances from either family members or friends living abroad. This alone, assuming all other factors remain constant, will result in improved economic wellbeing as the poor will get a source of income. Opiyo (2014) asserts that interdisciplinary research has focused on the contribution remittances make to economic development. Omwansa (2014) noted that the use of mobile money increased money circulation boosting local consumption for the rural people spurring economic activity. They further assert that the flow of remittances to rural areas increase economic activity by enabling “just-in-time” transfers that make capital available whenever it is needed.

#### **2.4.5 Financial Inclusion**

Renny (2013) defines financial inclusion as, ‘the process that ensure the ease of access, availability and usage of the formal financial system for all members of an economy’. Broadly, it means access to finance and financial services for all in a fair, transparent and equitable manner at an affordable cost. Opiyo (2014) denotes it as a, ‘delivery of financial services at an affordable cost to the vast sections of the disadvantaged and low-income groups including households, enterprises, SMEs, traders. The various financial services include credit, savings, insurance and payments & remittance facilities’. Oluwataya (2013) defined it as a, ‘process of bringing the weaker and vulnerable sections of society within the ambit of the organized financial system. It creates conditions for access to timely & adequate credit and other financial services by vulnerable groups, such as weaker sections and low-income groups at affordable cost’.

### **(a) Access to Financial Services**

Accessibility of financial services by those in remote areas, often rural areas, has been cited as a barrier to financial inclusion. Okutoyi (2013) refer to this as a logistics barrier in that “financial services are not developed in many regions where it is not considered feasible by the service provider”. Mobile banking has been found in this research to be considered as easily accessible. The issue of accessibility of financial services providers has been a cause for concern for the RBZ which has been calling for banks and Microfinance institutions to open outlets in rural areas so that the ‘unbanked’ people could join the main stream economy.

Access to mobile banking also brings positive change in income which leads to socio-economic empowerment through increasing saving habits, lessening family violence, raising capabilities to deal with social evils, day to day problems, enhanced asset ownership, creation of employment, improved purchasing power, buying of new clothes, boosting confidence of rural masses, declining income inequality, greater ability to meet unforeseen circumstances, improved standard of living and change in life style (Ishengoma, 2011). Mobile banking plays a significant role in facilitating inclusion of excluded population.

### **(b) Convenience of Financial Services**

The ability to use a product is key to its adoption and to this end the Centre for Financial Inclusion (CFI) stated that “full financial inclusion is a state in which all people who can use them have access to a suite of quality financial services, provided at affordable prices, in a convenient manner, and with dignity for the clients” (Jack & Suri, 2013). The issue of ability to use the system has a direct bearing on adoption of the facility.

Mobile banking has the ability to reach the ‘unbanked’ sectors of the economy (Klein and Mayer, 2011), for as long as there is mobile connectivity and the capturing of this market increases the participants in the financial services sector.

Financial inclusion refers to the access of affordable financial services by the previously excluded low income and vulnerable groups (Agarwal 2010). Through mobile banking, it provides greater financial intermediation of the economy as a whole or financial deepening which then drives demand. Technology then facilitates distribution of financial resources to previously excluded areas thereby stimulating economic growth. The adoption of m-banking by the ‘unbanked’, who are the majority, according to empirical evidence, will lead to improvement and growth of the financial market in the country. Therefore, it can be inferred that this will lead to economic growth based on the financial deepening hypothesis.

### **(c) Safety of Financial Services**

Literature reveals that the mobile money is faster, cheaper, more reliable, and safer (Jack & Suri 2011). The benefits of cashless transaction including less opportunity for fraudulent and criminal activities, and mobile money technology have increased adoption rates among SMEs in the capital city (Mbogo 2014). Although the bigger percentage of respondents in all income groups believe m-banking is secure to use, a significant proportion of the respondents were not sure of this proposition. There is need to allay this high level of uncertainty on security of the m-banking product depicted by the number of respondents who are not sure of its security levels. People may shun using m-banking if they feel insecure.

The speed and safety of mobile money services has enabled quick and easy transfer of money. This has sparked the growth of various economic activities, especially in the rural areas, through increased money circulation boosting local consumption (Zutt 2010). It is likely that reduced costs and increased efficiency and reliability of the systems have enabled more people to send money to the rural areas increasing economic activities in those places. Mobile money also provides safe storage mechanism for households and businesses for future use. Improving savings culture among majority poor could improve their economic status by giving them opportunity to meet their financial needs in times of emergency. In Kenya for

instance, the operators have provided the users the opportunity to save and borrow e-money via their wallet while earning interest as well. Other customers who are eligible too can secure emergency credit facility (loan).

## **2.5 Critique of the Existing Literature**

Various studies have been conducted on mobile led financial services and financial inclusion, both globally and locally. Ondiege (2015) did a study on regulatory impact on mobile money and financial inclusion in African countries targeting Kenya, Nigeria, Tanzania and Uganda. This study examined both telecom-led model and a bank-led model and their influence on inclusion. However, these studies fail to highlight on synergism brought about by complementarity of the two models. Further, this study focused on challenges of adoption of technology rather than the core objective which was the influence of mobile led financial services on financial inclusion.

Mago and Chitokwindo (2014) conducted a study on the impact of mobile banking on financial inclusion in Zimbabwe focusing on Masvingo Province. However, conspicuously, the study left out on a comparative assessment of different players in the mobile money services. Therefore, it left out on the competition bit which is a requisite in a competitive financial environment for attainment of financial inclusion. In addition, the study was limited to the informal sector and tertiary students, which is different from commercial banks and mobile money service providers.

Merritt (2010) on the next phase in the evolution in person-to-person payments in mobile money transfer services did not show the influence of mobile led financial services competitiveness on financial inclusion. Johnson (2014) study on competing visions of financial inclusion in Kenya highlighted the role of mobile money transfer. This study, however, did not show the influence of mobile led financial services competitiveness on financial inclusion.

Mehrotra and Yetman (2013) studied the role of central banks in financial inclusion. This study failed to address the issue of competitiveness of mobile led financial services that clearly outlines efforts by various firms to enhance their market and in so doing enhancing financial inclusion.

Bansal (2014) did a study, perspective of technology in achieving financial inclusion in rural India. This study shows an attempt to study the contribution of ICT towards financial inclusion in the country and analyze different application of ICT which banks are adopting. However, the study does not precisely show the role of other players in the industry. Also, the study disregards other factors that may influence mobile led financial services. These may include company's inherent characteristics as well as customer's taste and prevalence. Having been limited to India, the findings of the study cannot be generalized to Kenya.

## **2.6 Research Gaps**

Various studies have been conducted on mobile led financial services and financial inclusion, both globally and locally. Globally, Maimbo *et al.* (2013) evaluated the opportunities and challenges of mobile money development in Africa; Jack and Suri (2013) examined the impact of reduced transaction costs on risk sharing by estimating the effects of a mobile money innovation on consumption in Ghana; and Oluwataya (2013) examined the banking the unbanked in rural Southwest Nigeria using mobile phones as mobile banks among farming households. Different countries around the world have different macroeconomic factors and regulatory framework governing mobile financial services. Therefore, these findings cannot be generalized to Kenya.

In Kenya, Mbogo (2014) investigated the success factors attributable to the use of mobile payments by micro business operators in Kenya; Masita-Mwangi *et al.* (2012) examined the use of mobile money services among small and medium enterprises in Kenya; and Ndunge and Mutinda (2012) the relationship between mobile money

services and poverty reduction among women groups in rural eastern Kenya. These studies did not show the influence of pricing of financial services, service investment, size of the firm and efficiency of financial services on financial inclusion. Specifically, the study will look at effect of pricing of financial services, service investment, size of the firm and efficiency of financial services on financial inclusion in Kenya.



**Table 2. 1: Summary of the Research Gaps**

<b>Author(s)</b>	<b>Focus of the Study</b>	<b>Methodology</b>	<b>Findings</b>	<b>Knowledge gaps</b>
<b>Pricing of Mobile Led Financial Services</b>				
Maimbo <i>et al.</i> (2013)	The opportunities and challenges of mobile money development in Africa	The study used a survey research design.	The results indicated that prices are high because of underdeveloped payment systems infrastructure, inappropriate legal frameworks, and the difficulty many migrants have obtaining identification in order to access finance.	The study did not show how pricing influences financial inclusion
Jack and Suri (2013)	The impact of reduced transaction costs on risk sharing by estimating the effects of a mobile money innovation on consumption in Ghana	The study adopted a cross sectional study design	The study found that mobile money significantly impacts on the ability of a household to spread risks as a result of reduced transaction costs compared to households without mobile money who are likely to suffer a drop-in consumption when hit by a negative income shock	Having been limited to Ghana, the findings of this study cannot be generalized to Kenya
Mbogo (2014)	To investigate success factors attributable to the use of mobile payments by micro business operators in Kenya	The study is based on a survey conducted through administration of questionnaire	The study results revealed positive correlation between transaction costs and the behavioral intention to use the mobile payment services and actual usage.	The study did not show the influence of pricing of mobile led financial services on financial inclusion

Masita-Mwangi <i>et al.</i> (2012)	The use of mobile money services among small and medium enterprises in Kenya.	The study adopted a survey research design	The results indicated that mobile money services allow small retailers identified as mobile networks agents to act as bank branches by charging a small fee for each transaction. These mobile money fees are significantly less than fees charged by traditional services such as the bank and Western Union.	The study was limited to small and medium enterprises and hence the findings cannot be generalized to commercial banks and mobile money service providers
Omwansa and Waema (2012)	The adoption of mobile money by the poor in Nairobi	The study adopted a survey research design	The results indicated that the transaction costs of sending money through the mobile payment technology are lower than those of banks and money transfer companies.	The study did not show how pricing influences financial inclusion
Ndunge and Mutinda (2012)	The relationship between mobile money services and poverty reduction among women groups in rural eastern Kenya	The study adopted a descriptive research design	the results indicated that cost of the mobile payments should be affordable to most of the micro business operators and far below what the banks normally charge for their bank transactions	The study was limited women groups in rural eastern Kenya and hence its findings cannot be generalized to commercial banks and mobile service providers.
<b>Service investment</b>				
Ouma and Ramo (2013)	The impact of mobile money on microcredit on women-owned small and medium enterprises	The study used a descriptive research design	The study found that the recent growth of mobile money has allowed millions of people who are otherwise excluded from the formal financial system to perform financial transactions relatively cheaply, securely, and reliably	The study was limited to women-owned small and medium enterprises and hence its findings cannot be generalized to commercial banks and mobile service

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IFC (2013)	Evaluated a mobile money product adoption in Kenya	A survey research design was used	The found that mobile money has achieved the broadest success in Sub-Saharan Africa, where 16 per cent of adult's report having used a mobile phone in the past 12 months to pay bills or send or receive money.	providers. The study did not show how investments in mobile led financial services influence financial inclusion in commercial banks and mobile service providers.
Aduda and Kalunda (2012)	The utilization of mobile money systems in microfinance institutions	The study adopted a descriptive research design	The results indicated that insurance, credit, and savings services are now being developed atop mature mobile money systems.	The study was limited to microfinance institutions and hence its findings cannot be generalized to commercial banks and mobile service providers.
Mas and Morawczynski (2014)	Evaluation of mobile money for the unbanked	Critical review of literature	The study opined that connecting Kenyan households to an electronic payment system for cash transfers would have considerable impact through reduced leakages, transaction costs, and overheads	The study used a critical review of literature and hence specific associations between investment and financial inclusion were not outlined.
Oluwataya (2013)	The banking the unbanked in rural Southwest Nigeria using mobile phones as mobile banks among farming households	A descriptive research design was used	The findings indicated that when savings are made to a bank via mobile money, it provides a further mechanism to borrow funds based on savings.	The study was limited to Nigeria and hence its findings cannot be generalized to Kenya

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**Firm Size**

Maimbo et al. (2013)	The opportunities and challenges of financial sector development in Africa	The study used a descriptive research	The results indicated that in cases where a mobile money service is tied to a dominant mobile network operator (as in the case of Kenya's Safaricom, which has 68 percent of the mobile subscriber's market, that operator is at an advantage in dictating the terms of the product to ease access.	The study did not show specifically how firm size influences financial inclusion
Zutt (2014)	The role of mobile banking on poverty reduction in Kenya	Survey research design was used	The study found that the growth of mobile money services in Kenya has been particularly dramatic because it has overtaken the banking network in a very short time. This has been made possible through the expansion of financial agents who enabled growth to exceed the traditional banking outlets by a wide margin.	The dependent variable was poverty reduction, which is different from financial inclusion
Aker and Mbiti (2014)	The relationship between mobile Phones and Economic Development in Africa	The study used a descriptive research design	The extensive coverage of mobile service providers as outlined above has not only resulted to high rates of convenience, but has made the service effective and reliable as a form to send money with the interface between agents and customers functioning with minimal complaints from customers	The dependent variable in this study was economic development, which is different from financial inclusion

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**Efficiency of Mobile Led Financial Services**

Okutoyi (2013)	The impact of mobile money services on the performance of small and medium enterprises in an urban town in Kenya	The study used an exploratory research design	The results demonstrated the effects of using mobile money in the improvement in information flow between transacting parties allowing efficiency between the trading without travelling.	The study is conducted among small and medium enterprises and hence the findings cannot be generalized to commercial banks and mobile service providers.
Njenga (2014)	Mobile phone banking Usage experiences in Kenya	A descriptive explanatory research design	The study found that mobile communication networks enable information to move freely, enabling markets to be more efficient thereby unleashing entrepreneurship and consequently leading to financial innovation that allows mobile phones to be used as gateways to financial access by the previously unbanked rural communities.	The study did not measure efficiency and did not show how efficiency on mobile led financial services influence financial inclusion
Donovan (2013)	The role of M-Pesa in Kenya in enhancing human freedom	Survey research design was used	a relationship of networks of social interactions, the need and desire to coordinate financially with friends, relatives and businesses, and progressive desertion of other alternatives like banks and Western Money Union lead to a form of power that acts on all Kenyans both users and non-users of M-Pesa.	The study was limited to M-Pesa, a product of Safaricom and hence did not look at other mobile money service providers
Mbogo (2014)	The impact of mobile payments on the success and growth	The study adopted a descriptive	The results indicated that efficient and affordable money transfer and payment services are an important financial service	The dependent variable was success and growth of micro-business and hence the

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	of micro-business	research design	most people require, including those who do not typically use financial or banking services.	findings cannot be generalized to financial inclusion in commercial banks and mobile service providers.
Omwansa (2014)	The progress and prospects of M-Pesa.	The study adopted an exploratory research design	The results indicated that a lost or stolen mobile phone does not mean catastrophe as no one can access an M-Pesa account without a correct personal identification number (PIN).	The study did not show how efficiency in mobile led financial services influences financial inclusion.

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## **2.7 Summary**

The study was anchored on four theories on Theory of Financial Deepening, Technology Acceptance Model, the Diffusion of Innovation Theory and Transaction Cost Theory. The theory of financial deepening is used to explain the role of mobile money services in financial inclusion. Mobile money facilitates financial inclusion as a key variable of financial deepening which helps to address the basic issue of growth with equity. The Technology Acceptance Model is important for this study as mobile money usage is becoming a serious channel of financial inclusion. Individuals to be served will use technology when they get knowledge of it and are persuaded that it is good. Commercial banks have to make mobile money usage appealing to make it a driver of strategy with regard to expected performance, effort, social influence, and facilitating conditions. The diffusion of innovation theory indicates that adoption of a new idea, behavior, or product (innovation) for example that of mobile led financial services does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. In addition, the transaction costs theory focuses rather strongly the asset specificity and its role in determining how to better organize exchanges. The theory argues that if transactions are infrequent then the costs of alternative governance structures may not be justified.

The empirical review showed that pricing of mobile led financial services in terms of competitive pricing and restrictive pricing had an influence on performance and adoption of mobile banking. In addition, empirical studies showed that service investment should be measured in terms of returns and capital investment. Also, the empirical studies show that the measures of firm size include access to finance, economies of scale and property rights protection. Also, the measure of efficiency of mobile led financial services includes operational costs, response time and remittance.

The uptake of mobile phones in Kenya has been unprecedented. The most significance is rapid absorption of mobile based banking services. This trend of continued reliance on mobile devices to execute monetary transactions is steadily gaining momentum. In an effort to gauge the implications of these mobile led financial services phenomena, this study set sets out to bring to light the impacts arising from the emergent mobile technology innovations on financial inclusion. This study is structured to offer insights into the current state of mobile phone banking service as well as a review of emerging impacts on financial inclusion.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the methodology, which was used to carry out the study. It further describes the type and source of data, research philosophy, research design, the target population and sampling methods and the techniques that were used to select the sample size. It also describes how data was collected and analyzed. The suitable methodology in this study gives the guidelines for information gathering and processing.

#### **3.2 Research Philosophy**

Research philosophy outlines the way data of a certain phenomenon should be gathered and analyzed (Saunders, Lewis & Thornhill, 2007). According to Saunders *et al.* (2007), research philosophy can be divided into three categories namely; positivism, interpretivism and realism.

This research relied on positivism philosophy. Positivism research philosophy is grounded on the belief that reality is stable. This reality can be observed and described from an objective viewpoint without necessarily interfering with the phenomenon itself (Matta, 2015). Positivists believe that hypothesis developed from existing theories can be tested by measuring observable social realities, thus positivism is derived from natural sciences. Based on previously observed, explained realities and their interrelationships, it is then possible under positivism research philosophy to make predictions. Halfpenny (2015) asserts that positivism research philosophy can be used to investigate what truly happens in organizations through scientific measurement of people and system behaviors. Moreover, Korstanje (2014) contend that, any knowledge that is not based on positivist thought is unscientific and invalid.

Under positivism research philosophy, it is possible to test hypothesis and generalize the findings (Halfpenny, 2015). However, to test the hypothesis, there is need to translate the underlying concepts into measurable forms (Saunders *et al.*, 2007). For instance, in this study pricing of mobile led financial services is a construct that needs to be properly measured in order to test its effect on financial inclusion in commercial banks and mobile service providers in Kenya.

### **3.3 Research Design**

This research problem was studied through the use of a descriptive research design. Bhattacharjee (2012) defines a research design as the scheme, outline or plan that is used to generate answers to research problems. Kultar (2007) indicates that research design can be thought of as the structure of research. Cooper and Schindler (2006) indicate a descriptive research design is concerned with finding out the what, where and how of a phenomenon. Descriptive design is a method of collecting information by administering questionnaires and interviews it is focused on the respondent's views. It involves asking a set of same questions to a large number of individuals through mail, face to face or telephone to capture relevant information and to accomplish the set objective. A descriptive approach was used because it is able to collect accurate data on and provide a clear picture of the phenomenon under study. In addition, this research design was chosen because it allowed generalization of the findings to the target institutions and individuals. In this study, it allows generalization of the findings to all the commercial banks and mobile financial services providers in Kenya. Descriptive research design has been used in the past by other authors. For instance, Kithinji (2017) used a descriptive research design in the assessment of the effect of digital banking strategy on financial inclusion among commercial banks in Kenya. In addition, Kihara (2015) conducted a study on the effect of mobile banking on the competitive advantage of commercial banks in Kenya using a descriptive research design.

### **3.4 Target Population**

Target population as described by Russell (2013) is a universal set of study of all members of real or hypothetical set of people, events or objects to which an investigator wishes to generalize the result. The unit of analysis was the 42 commercial banks and the 6 mobile service providers. Singpurwalla (2013) explained that the target population should have observable characteristics to which the researcher intends to generalize the result of the study. This definition assumes that the population is not homogeneous. The unit of observation was the heads of departments and their assistants in the 42 commercial banks and the 6 mobile service providers. The target population of this study was therefore the heads of human resource, finance, operations, customer service/relationship management, credit, internal audit, ICT, risk management, corporate and regulation affairs departments and their assistants in the 42 commercial banks. The target population also included heads of human resource, operations, customer operations, technical and IT, internal audit, strategy and innovation, corporate and regulation affairs, sales and marketing as well as their assistants in the 6 mobile service providers. The target population will therefore be 852 heads of departments and their assistants.

**Table 3. 1: Target Population**

<b>Category</b>	<b>Number of institutions</b>	<b>Target Population</b>
Tier one banks	10	180
Tier two banks	12	216
Tier three banks	20	360
Mobile service providers	6	96
<b>Total</b>	<b>48</b>	<b>852</b>

### **3.5 Sampling Frame**

The sampling plan describes the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample will be selected (Cooper & Schindler, 2006). It is the source material or device from which list of all elements within a population that can be sampled is drawn and may include individuals, households or institutions. It's a published list in which or a set of directions for identifying a population (Creswell, 2014). It highlights features such as single representations of each and every element, numerical identities, contacts information, maps, location and other relevant information presented in a logical and systematic fashion and exclusion of elements outside the population of interest. A sampling frame facilitates formation of a sampling unit that refers to one member of a set of entities being studied, which is the material source of the random variable. Common examples of a unit would be a single person, animal, plant or manufactured item that belongs to a large collection of such entities being studied. For the purpose of this study, sampling frame comprised of heads of departments and their assistants in the 42 commercial banks as well as the 6 mobile financial services providers listed in appendix 3 and 4 respectively.

### **3.6 Sample and Sampling Technique**

A sample is a segment or a subset of the population that is selected for analysis and a representative sample is one that accurately reflects the population that is being sampled. Bhattacharjee (2012) defines sampling as the process of selecting a number of individuals for a study from the larger group referred to as the population. Greener (2008) defined sampling as a definite statistical plan concerned with all principle steps taken in the selection of a sample and the estimation procedure.

#### **3.6.1 Sampling Technique**

This study used stratified sampling method. Stratified sampling divides a heterogeneous population into a number of distinct categories or strata of independent sub population from which individual elements can be randomly selected. The study stratified the population into administrative positions. Kothari (2004) argues that the technique produces estimates of overall population parameters with greater precision and ensures a more representative sample is derived from a relatively homogeneous population. Stratification aims to reduce standard error by providing some control over variance.

With proportionate stratification, the sample size of each stratum is proportionated to the population size of the stratum. This means that each stratum has the same sampling. Greener (2008) indicates that proportionate stratification provides equal or better precision than a random sample of the same size, the gains in precision accrue to all survey measures. There were four levels of stratification comprising of Tier One Banks (Large), Tier Two Banks (Medium), Tier Three Banks (Small) and Mobile Service Providers.

Given the high homogeneity among the respondents in the different strata, the study randomly selected from the target population for inclusion in the study from the Tier One Banks (Large), Tier Two Banks (Medium), Tier Three Banks (Small) and Mobile Service Providers. Additionally, the researcher used random sampling to get

the actual respondents in each stratum. The study purposively sampled head of departments and their assistants of each of the 42 commercial banks and the 6 mobile service providers.

### 3.6.2 Sampling Size

The sample size for the study was at 95% confidence level with a margin of error of 5%. Owing to the anticipated large number of employees, the study employed the Fisher's formula for determining sample sizes in large populations (Creswell, 2014). This is as shown below:

$$n = \frac{Z^2 pq}{d^2}$$

Where n = the required sample size, when the target population is more than 10,000

Z = is standard normal deviate at the required confidence level, 0.05, which gives 1.96

p = is the proportion of the target population estimated to have the characteristics being measured when one is not sure, so one takes middle ground (0.5)

$$q = 1-p (1 - 0.5 = 0.5)$$

d is the level of statistical significance, which is a standard set at 0.05

$$n = \frac{1.96^2 * 0.5 * 0.5}{0.05^2}$$

Therefore n = 384 respondents

The study thus reached a sample population of 384 respondents distributed across the strata as elaborated in the sampling frame (table 3.2).

**Table 3. 2: Sampling Size**

<b>Category</b>	<b>Number of institutions</b>	<b>Target Population</b>	<b>Sample Size</b>
Tier one banks	10	180	81
Tier two banks	12	216	98
Tier three banks	20	360	162
Mobile service providers	6	96	43
<b>Total</b>	<b>48</b>	<b>852</b>	<b>384</b>

### **3.7 Data Collection Methods**

Research methodology triangulation was applied because the study used both primary and secondary data methods of data collection so that to improve validity and reliability. Greener (2008) argued that by applying combination of several research methodologies in the study of the same phenomenon, it increases credibility of knowledge by improving both consistency and generalizability.

The Primary data was collected by use of structured questionnaire that captured the various variables of the study. The Likert-scale was used in the questionnaire. This enabled gathering the required information by restricting the respondents from giving unnecessary information. This design was chosen because researcher wanted to obtain accurate data. It also made the process of filling in the questionnaire to be easy by ticking where necessary. Face to face interviews were also conducted in order to fill the same questionnaires where respondents were unable to fill questionnaire. The questionnaire was designed to address specific objective research question and test hypothesis (Kothari 2004). The digitized questionnaires, as well as manual and in Permanent Document Format (PDF) with structured questions were administered to respondents with the help of research assistants. The questionnaire was divided into two parts. Part A was questions concerning the respondent, Part B predictor and dependent variables. The questionnaire was structured to cover all the parameters for the dependent and independent variables. The questionnaires were

administered to all sampled 384 respondents. The questionnaires allowed the respondents to fill/give the required information at their appropriate time and also save time of the researcher in collecting the data. The questionnaire covered questions on pricing of mobile led financial services, service investment, firm size, efficiency of mobile led financial services and financial inclusion. Questionnaires have been used in other related studies in the past. For instance, Asongu and Asongu (2018) conducted a study on the comparative exploration of mobile money services in inclusive development; and Kimenyi and Ndung'u (2014) conducted a study on expanding the Financial Services frontier using Mobile Phone Banking in Kenya.

The secondary data was collected through review of published literature such as journal, articles, scholarly materials, published theses and texts and textbooks related to subjects being studied. Secondary data was also obtained from the annual reports of financial institutions as well as the mobile led financial serves. Other sources include annual reports from Central Bank of Kenya. Under this method the researcher used already recorded data in order to come up with necessary information of the study. This method allowed the researcher to analyze what had been done to avoid replication and it also assisted in data comparison. It was used also to complement information from primary data.

The table 3.4 provides an overview of proxy variables, which were used in the study.



**Table 3. 3: Operationalization of Variables in the Study**

<b>Variables</b>	<b>Measures/Operationalization</b>	<b>Meaning</b>	<b>Questionnaire Items</b>
<b>Independent variables</b>			
Pricing of mobile led financial services	i.) Affordability	Net effect of price on utilization of money transfer services	Part B Page 2
	i.) Competitive Pricing	This is setting the price of a product or service based on what the competition is charging.	
	ii.) Restrictive Pricing	This is a reduced price, which companies are not allowed to surpass when selling a particular product	
Service investment	i.) Returns	This is the money made or lost on an investment.	Part C Page 3
	ii.) Capital Investment	These are funds invested in a firm or enterprise for the purpose of furthering its business objectives.	
Firm Size	i.) Access to financing	This is the ability of individuals or enterprises to obtain financial services, including credit, deposit, payment, insurance, and other risk management services.	Part D Page 4
	i.) Economies of Scale	This is a competitive advantage that large entities have over smaller entities	
	ii.) Right Protection	This is the locking mechanism which prevents modification or deletion of data on a storage device	
Efficiency of mobile led financial services	i.) Operational Cost	These are the expenses which are related to the operation of a business of delivery of a service	Part E Page 5
	i.) Response Time	This is the time a system or functional unit takes to react to a given input.	
	ii.) Cycle Time	This is the total time from the beginning to the end of a process, as defined by an organization and a customer.	

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**Dependent variable**

Financial Inclusion

i.) Access

This is the ability of individuals or enterprises to obtain financial services, including credit

Part F

i.) Convenience

This is the state of accessing financial services without difficulty.

Page 6

ii.) Safety

This is the protection of finances and financial services

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### **3.8 Data Collection Procedure**

Data collection refers to the process of gathering raw and unprocessed information that can be processed into meaningful information, following the scientific process of data analysis (Bryman & Cramer, 2012). Concerning data collection, a structured questionnaire was developed for use in the study. To ensure the understanding of the research problem and research methodology, including how to administer the instrument, one-day training for the research assistants was held. The appropriate numbers of copies of the research instrument was made available. They were distributed to the five research assistants to collect the data from the respondents. The questionnaires were sent to the respondents under a questionnaire-forwarding letter accompanied by an introductory letter from the University (Appendix I).

Due to the large size of the sample, the drop and pick later method was used to administer the questionnaires. This also gave busy organizational leaders adequate time to respond. Care was however taken to ensure personal contact during dropping and picking of the questionnaires so that the study or research assistants were able to address any matters arising immediately. The researcher administered all the face-to-face interviews. A qualified research assistant who had been trained on handling data collection was tasked with the delivery and collection of questionnaires. The researcher continued to liaise with the research assistants who surrendered the completed questionnaires and any other materials from the various respondents together with their field notes, which included general impressions on the research process. The questionnaires were brought to one place in order to be analyzed.

### **3.9 Pilot Testing**

Kothari (2004) reports that a pilot test is a start phase in data gathering of the research process. Pilot test is conducted to detect weakness in design and instrumentation and to provide alternative data for selection of probability sample. The main purpose of pilot testing is to catch potential problems before they become

costly mistakes, provide an indication of time required for actual fieldwork and possible modifications of the instrument and modality of data collection. The pre-pilot is not a formal procedure, more an information gathering exercise.

The advantages of conducting the pilot test include enhancing the training of field staff, review of the instrument, prevention of wasteful expenditures on a full-blown survey whose results may not be applicable. The advantages outweigh the disadvantages of costs and the attendant possibility of redesign of both the survey and instrument (Creswell, 2014). Pilot Testing ensures that the field staffs have a common understanding of the instrument and guidelines provided alongside the questionnaire (Creswell, 2014). Cooper and Schindler (2006) indicated that a pilot test is conducted to detect weaknesses in design and instrumentation and to provide proxy data for selection of a probability sample. Babbie (2007) argues that a pilot study is conducted when a questionnaire is given to just a few people with an intention of pre-testing the questions. Pilot test is an activity that assists the researcher in determining if there are flaws, limitations, or other weaknesses within the interview design and allows him or her to make necessary revisions prior to the implementation of the study. The subjects participating in the pilot study were not included in the final study to avoid survey fatigue. Greener (2008) note that a pilot test should draw subjects from the target population and simulate the procedures and protocols that have been designated for data collection.

A Pilot survey was carried out prior to the actual research. This aimed at testing the validity of the research instruments. Bryman (2003) states that it is always desirable if at all it is possible to conduct a pilot study before administering a questionnaire to your sample. Greener (2008) stresses the importance of pre-testing the questionnaire. This is done to obtain feedback, to check if the questionnaire is effective and well understood by the respondents. Kothari (2004) recommended a 1% sample from the population as being fit for statistical test of instruments. Care was taken to ensure that pilot study respondents are selected outside the main study sample but within the

target population with matching characteristics. The questionnaires were pre-tested to ensure that they are manageable, relevant, and effective. The researcher pre-tested the instrument using 40 respondents to ensure the correct information is obtained in relationship with the objectives of the study. The questionnaire content, structure, sequence, meaning of questions were appropriately designed.

The pilot data collected was analyzed to determine how much time is taken on each questionnaire or interview, and decide whether the instruments should be revised for length. The pilot test also tested data for relevance, interpretability and usefulness in addressing the study objectives. Finally, it drew responses from the interviewees on the design and content of the instruments, and suggestions for more efficiency and practical ways of administering them. Those sampled for the pilot testing were not eligible for the main sample of the study.

Before the actual study is carried out, the first pilot study is closely linked with the construction and testing of research instrument. The main purpose of the pilot was to improve the relevance of the items in the research instrument with the possibility of identifying any problem that can be controlled before the actual study and test the validity and reliability aspects of the research instrument. To obtain a good instrument, pilot studies must be carried out on the subject of the study appropriate to the target. Reliability is the measure of the degree an instrument used in research would yield the result or data after repeated trials. It is the consistency of the measurement, accuracy or precision of a measuring instrument (Bhattacharjee, 2012).

### **3.9.1 Validity of Research Instruments**

Russell (2013) indicates that validity is the accuracy and meaningfulness of inferences, based on the research results. One of the main reasons for conducting the pilot study is to ascertain the validity of the questionnaire. Validity has been defined as the degree to which an instrument measure what it purports to measure. It has been defined as the accuracy, truthfulness and meaningfulness of inferences that are

based on the data from the use of a tool. Validity is determined by the presence or absence of systematic error in data (Kothari, 2004).

There are two steps that are being promoted in a pilot study done by researcher in understanding and testing of validity and reliability. A research instrument should have validity and reliability, which is a measure of what should be measured. Singpurwalla (2013) indicates that the validity of the instrument is determined by requesting evaluation of the expert (referred to as the external evaluator) on each item in question.

Kothari (2004) reports that validity is “the degree to which the test actually measures what it purports to measure”, a direct check on how well the measure fulfills its function. Kothari (2004) submits that validity is “the extent to which we know what the test measures”. A test of validity therefore tests whether the measure of a concept really measures that concept. The following conceptions of validity are considered below: content-related validity; internal validity; construct related validity; and criterion-related validity.

Content Related validity is the degree to which the content of the items adequately represents the universe of the relevant items under study. Content validity was built into the scales through the derivation of these scales from theories. Kothari (2004) reports that the contribution of “internal consistency data to test validation is limited”, and “in the absence of data external to the test itself, little can be learned about what a test measure”. A test therefore can be reliable, but not valid. In terms of these requirements, internal reliability was measured and ensured to the extent that this supports internal consistency.

The study used the expert rating method to analyze the content validity of the instruments. Kothari (2004) reports that expert rate for content domains of a scale should be between five and ten, which was applied in the study. This study adopted

0.80 as the lower limit for acceptability of an item in an instrument. The formula applied to calculate the content validity index (CVI) is

$$C = \frac{K}{N}$$

Where:

K is the total number of items in the questionnaire declared valid by both raters

N is the total number of items in the questionnaire.

The validity of the items in the instrument was calculated as per the results of the Expert Raters.

**Table 3. 4: Content Validity Results**

<b>Experts</b>	<b>Total Items</b>	<b>Valid Items</b>	<b>Fractions</b>
Rater One	48	43	0.896
Rater Two	48	44	0.917
Rater Three	48	42	0.875
Rater Four	48	41	0.854
Rater Five	48	43	0.896
Rater Six	48	46	0.958
Average Total			0.899

The computed content validity indexes were compared with the standard content validity index of 0.80 for validity. All Experts raters had ratings above 0.80 and therefore the ratings indicated the instruments to be valid. These therefore enabled the collection of valid information.

Criterion-related validity refers to the effectiveness of a measure in terms of being able to predict an individual’s “performance in specified activities”, whereby performance is checked against a criterion, a “direct and independent measure” of that which it is designed to predict or other information about the individual’s

behavior. This was not considered to be an issue with regard to the surveying of these respondents. Attention was paid to the stipulations around issues of reliability and validity with regard to the data collection and testing processes. Construct-related validity relates to the extent to which the measure “may be said to measure a theoretical construct or trait”, deriving from “established relationships among behavioral measures” (Kothari, 2004). Construct validity was ensured through the derivation of scales tightly developed from theory that was directly tested. Construct validity was maintained through the anchoring of these constructs to the theory from which they were derived. Greener (2008) submits that content validity is determined by expert judgment. The university supervisors scrutinized the instrument to find out whether it addresses all the possible areas that are intended to be measured, ensure its appropriateness, completeness, and accuracy. They were relied upon to determine whether items in the instrument are an adequate representation of all the areas that are under investigation.

### **3.9.2 Reliability of Research Instruments**

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials. Kothari (2004) indicates that reliability refers to consistency of measurement; the more reliable an instrument is, the more consistent the measure. Greener (2008) suggests that, to be reliable, each instrument must consistently measure the factors for which they were designed to measure. Reliability may be internal reliability. Internal reliability refers to the consistency of results within a particular site, and the plausibility of data within that site. External reliability refers to the consistency and duplicative attributes of data across the sites. To ensure the internal reliability, low interference descriptors will be used in the qualitative research stage in order to create a careful audit trail, by recording the data and interviews using an appropriate device (with permission). In quantitative research, reliability deals with an indicator’s dependability, which means that the information provided by indicators does not vary as a result of the characteristics of the indicator, instruments or measurements devise itself (Orodho, 2007).



Bhattacharjee (2012) indicates that the respondent in a pilot test do not have to be statistically selected. Cronbach's alpha was used to test the reliability of the measures in the questionnaire. The Cronbach's Alpha measures internal consistency by establishing if certain item measures the same construct. Greener (2008) established the Alpha value threshold at 0.7, which the study benchmarked against. Cronbach Alpha was established for every objective in order to determine if each scale (objective) would produce consistent results should the research be done later on.

Cronbach's alpha was used to test the reliability of the proposed constructs. Cronbach's alpha reliability coefficient that ranges between zero and one implies that there is no internal reliability, while one indicated perfect internal reliability. Cronbach's alpha reliability coefficient value of 0.7 or higher is considered sufficient.

The study consists of four independent variables and one dependent variable. SPSS version 22 was used to find the reliability of the variables and the results are in Table 4.2. The reliability tests for the questionnaire in this study gave an overall Cronbach's alpha 0.7.

**Table 3. 5: Summary of Cronbach's Alpha (Reliability Coefficients)**

<b>Scale</b>	<b>Cronbach's Alpha</b>	<b>Number of Items</b>
Pricing of Financial Services	0.91	7
Service investment	0.76	7
Size of the Firm	0.74	7
Efficiency	0.71	7
Financial Inclusion	0.75	10

The reliability coefficients table shows that all the scales were significant, having an alpha above the prescribed threshold of 0.7. Pricing of Financial Services, with 7 items had the highest reliability ( $\alpha=0.91$ ) followed by Service investment ( $\alpha = 0.76$ ) with 7 items, then Financial Inclusion ( $\alpha = 0.75$ ) with 10 items while Size of the Firm and Efficiency had Alpha values of 0.74 and 0.71 respectively. The study thus found that the analysis was reliable and could be used for further investigation.

The recommended value of 0.7 was therefore used as a cut-off of reliability. It means that there is an acceptable degree of consistency among the responses against each item. A high Cronbach's alpha coefficient indicated that internal consistency is high for a given scale. The most common rule of thumb is that reliability level is acceptable at 0.7 though others suggest that is acceptable if it is 0.67 or above (Creswell, 2014).

### **3.10 Data Analysis and Presentation**

Data analysis and presentation assisted researcher on how to report results and findings. The study used quantitative and qualitative methods in analyzing data.

#### **3.10.1 Data Analysis**

Before processing responses, the completed questionnaires were edited for completeness and consistency. Quantitative data collected was analyzed through descriptive statistics and presented through tables, charts and in prose. This was attained through frequency distributions, means, modes, percentages, and standard deviations, simple and cross tabulations. There is no one single or correct way to analyze and present qualitative data. How one does should abide by the issue of fitness of purpose (Cooper & Schindler, 2006). Quantitative data for this study was derived from questionnaire and face-to-face interview. Fitness of purpose was to describe, explain and seek causality between competitiveness of mobile led financial services and its influence on financial inclusion in Kenya.

Descriptive analyses of the study were done and expressed through frequency tables, percentages, means, and standard deviations. Inferential statistics were used to test relationship between the variables. For these tests, ANOVA, t-test, and F-test were used. The ordinary least square regression analysis was used and interpreted to determine the influence that the independent variables had on the dependent variable.

The study generated quantitative data. Quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 24.0) and analyzed using descriptive statistics. The study also used inferential statistics to establish influence of mobile led financial services competitiveness on financial inclusion among commercial banks and mobile service providers in Kenya. Karl Pearson's correlation coefficient was used as a measure of linear correlation since variables in the model are of interval/ratio nature (Bryman & Cramer, 2012). This measure, usually symbolized by letter (r) varies between -1 and +1, with 0 indicating no linear relationship and squared of correlation coefficient i.e. coefficient of determination ( $R_2$ ) measures amount of variation in the dependent variable explained by independent variables. Greener (2008) show that the closer  $R_2$  is to 1, better the fit of the regression line to the actual data. The correlation coefficient was expected to be two-tailed as the relationship outcome is expected to be either positive or negative and at 95% confidence level.

Null hypothesis ( $H_0$ ) 1-4 were tested using T test statistics at 0.05 level of significance for 2-tailed test. This is because it is the most suitable inferential statistical tool which can determine whether significant relationship exists or not (Kultar, 2007). Decision rule was that the null hypothesis ( $H_0$ ) was not accepted if the calculated value in each research hypothesis is greater than the corresponding table value (Critical Value) which implies there exists a significant relationship (positive). While the null hypothesis ( $H_0$ ) was retained/accepted if the calculated value is less than critical value. This implied that there exists non-significant

relationship (negative).  $H_0$ , otherwise accepted  $H_0$ . The statistical test on hypothesis was examined against a threshold of alpha equals to 0.05 on all four hypotheses.

The following were regression models for testing the hypotheses:

Regression model for objective one;

**H<sub>01</sub>:** Pricing of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Whereby;

Y = Financial inclusion among commercial banks and mobile service providers in Kenya

$B_0$  = Constant

$\beta_1$  = Coefficients of determination

$X_1$  = Pricing of mobile led financial services

$\varepsilon$  = Error term

Regression model for objective 2;

**H<sub>02</sub>:** Service investment has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

$$Y = \beta_0 + \beta_1 X_2 + \varepsilon$$

Whereby;

Y = Financial inclusion among commercial banks and mobile service providers in Kenya

$B_0$  = Constant

$\beta_1$  = Coefficients of determination

$X_2$  = Service investment

$\varepsilon$  = Error term

Regression model for objective 3;

**H<sub>03</sub>:** Firm size has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

$$Y = \beta_0 + \beta_1 X_3 + \varepsilon$$

Whereby;

$Y$  = Financial inclusion among commercial banks and mobile service providers in Kenya

$B_0$  = Constant

$\beta_1$  = Coefficients of determination

$X_3$  = Firm size

$\varepsilon$  = Error term

Regression model for objective 4;

**H<sub>04</sub>:** Efficiency of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

$$Y = \beta_0 + \beta_1 X_4 + \varepsilon$$

Whereby;

$Y$  = Financial inclusion among commercial banks and mobile service providers in Kenya

$B_0$  = Constant

$\beta_1$  =Coefficients of determination

$X_4$  = Efficiency of mobile led financial services

$\varepsilon$  = Error term

In multiple analysis, multi linear regression model was used to analyze the respective relationships, which are defined in conceptual framework. Regression analysis is a statistical modeling technique used to identify meaningful stable relationship among sets of data. The application of analytical procedures is based on the premise that, in the absence of known conditions to the contrary, relationships among information may reasonably be expected to exist. Regression measures the causal relationship between one dependent and one independent variable. Multiple regression analysis measures the effects of multiple independent variables on one dependent variable (Kothari, 2004).

The multiple linear regression analysis was formulated and performed in the following general regression equation: -

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where;

$Y$  = the dependent variable (Financial inclusion)

$X_1$  = Pricing of mobile led financial services

$X_2$  = Service investment

$X_3$  = Size of the firm

$X_4$  = Efficiency of mobile led financial services

While  $\beta_0$  is a constant, which denotes financial inclusion,  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  and  $\beta_4$  are regression coefficients to be estimated and  $\varepsilon$  is the error term.

The model was first subjected to F-test to establish whether the variables were jointly significant. T-test was further computed for the individual variables' coefficients to determine their significance in the model. Null hypothesis was either accepted or not accepted based on the p-value obtained. The decision rule is to reject the hypothesis where p-value < 0.05. Recommended procedures were done step by step according to the test for analysis. Overall analytical procedures are clarified and simplified in Table 3.6.

**Table 3.6: Overall Analytical Procedure**

<b>PROCEDURE</b>	<b>ANALYSIS</b>	<b>STATISTICS METHOD</b>
1	Reliability and validity of tests used to determine the measurement was valid at the variables involved in the structure of research/studies that examined.	The Reliability Test (Cronbach's Alpha)
2	Identify the mean, variance, maximum and minimum frequency of dependent and independent variables in the theoretical framework and run the profile of respondents.	The descriptive Analysis Statistics.
3	<b>H0<sub>1</sub></b> : Pricing of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.	Analysis of Pearson Correlation
4	<b>H0<sub>2</sub></b> Service investment has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya	Analysis of Pearson Correlation
5	<b>H0<sub>3</sub></b> Firm size has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.	Analysis of Pearson Correlation



6	<p><b>H0<sub>4</sub></b> Efficiency of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.</p>	<p>Analysis of Pearson Correlation</p>
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### 3.10.2 Data Presentation

Descriptive statistics involved use of absolute and relative (percentages) frequencies, measures of central tendency and dispersion (mean and standard deviation respectively). Quantitative data was presented in tables and graphs and explanation were presented in prose. 3.10.3 Variable Definition and Measurement

Table 3.7 indicates the operational definition of variables which includes their respective indicators, measurement, type of statistical analysis and the tool of analysis.

**Table 3.7: Variable Definition and Measurement**

<b>Variables</b>	<b>Indicators</b>	<b>Measuring Scale</b>	<b>Research Approach</b>	<b>Type of Statistical Analysis</b>	<b>Tool of Analysis</b>
Pricing of mobile led financial services	<ul style="list-style-type: none"> <li>• Affordability</li> <li>• Competitive pricing</li> <li>• Restrictive pricing</li> </ul>	Ration	Quantitative	Parametric	<ul style="list-style-type: none"> <li>• Person correlation analysis</li> <li>• Regression analysis</li> <li>• Arithmetic Mean and Standard Deviation</li> </ul>
Service investment	<ul style="list-style-type: none"> <li>• Returns</li> <li>• Capital investment</li> </ul>	Ration	Quantitative	Parametric	<ul style="list-style-type: none"> <li>• Person correlation analysis</li> <li>• Regression analysis</li> <li>• Arithmetic Mean and Standard Deviation</li> </ul>
Firm Size	<ul style="list-style-type: none"> <li>• Access to financing</li> <li>• Economies of scale</li> <li>• Rights Protection</li> </ul>	Ration	Quantitative	Parametric	<ul style="list-style-type: none"> <li>• Person correlation analysis</li> <li>• Regression analysis</li> <li>• Arithmetic Mean and Standard Deviation</li> </ul>
Efficiency of mobile led financial services	<ul style="list-style-type: none"> <li>• Operational costs</li> <li>• Response time</li> <li>• Cycle time</li> </ul>	Ration	Quantitative	Parametric	<ul style="list-style-type: none"> <li>• Person correlation analysis</li> <li>• Regression analysis</li> <li>• Arithmetic Mean and Standard Deviation</li> </ul>

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Financial Inclusion	<ul style="list-style-type: none"><li>• Access of financial services</li><li>• Convenience of financial services</li><li>• Safety of financial services</li></ul>	Ration	Quantitative	Parametric	<ul style="list-style-type: none"><li>• Person correlation analysis</li><li>• Regression analysis</li><li>• Arithmetic Mean and Standard Deviation</li></ul>
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### **3.10.4 Diagnostic Tests**

The following diagnostic test will be carried out to ensure that the data used fits the basic assumptions of linear regression models. An assessment of the normality of data is a prerequisite for many statistical tests because normal data is an underlying assumption in parametric testing (Creswell, 2014). This study used Shapiro-Wilk Test to test for normality of data. The null-hypothesis of this test is that the population is normally distributed. Thus, if the p-value is less than the chosen alpha level, then the null hypothesis is not accepted and there is evidence that the data tested are not from a normally distributed population; in other words, the data are not normal.

Multicollinearity exists when there is a strong correlation between two or more predictor variables in a regression model and it poses a problem in multiple regressions (Babbie, 2007). Multicollinearity in regression is a condition that occurs when some predictor variables in the model are correlated with other predictor variables. One variable can be predicted from the other with some degree of accuracy. Multicollinearity was tested in this study using tolerance and variance inflation factors (VIF). The tolerance measures the influence of one independent variable on all other independent variables. Problems occur if VIF is 10 and above. At each level the predictor variables, the variance of the residual terms is expected to be constant, that is - homoscedasticity.

Autocorrelation in this study was tested by use of Durbin–Watson statistic. Statistically, Durbin–Watson statistic is a statistical test used in detecting autocorrelation in regression analysis residuals (Creswell, 2014). Durbin–Watson statistic can assume values ranging from 0 to 4. The rule of the thumb in this test statistic is that values between 1.5 and 2.5 ( $1.5 < d < 2.5$ ) show that there is no autocorrelation in the data. In this study, Durbin–Watson statistic was 1.733, which lies between 1.5 and 2.5.

## **CHAPTER FOUR**

### **RESEARCH FINDING AND DISCUSSION**

#### **4.1 Introduction**

This chapter presents the results of data analysis and presentation of data collected from sample using questionnaire, which was designed to measure the hypothesis of the study. It provides the empirical findings and results following the application of the variables using the techniques indicated in the third chapter. It contains the research response rates, demographic characteristics of the study variables, data normality analysis, factor analysis, descriptive statistics of independent variables, correlation of variables, regression analysis, hypothesis testing and summary of the chapter.

#### **4.2 Response Rate**

Response rates both the initial response rate and attrition rates in longitudinal studies have historically been important rough-and-ready yardstick to judge data quality. The sample size consisted of 384 Heads of Departments and their Assistants in the 42 commercial banks and the 6 Mobile Service Providers. To this end, a response rate of 77.3% was achieved with 297 respondents reached out of the 384 targeted. This indicates a high response rate, which is acceptable as commended by Greener (2008). According to Mugenda and Mugenda (2003), 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. Table 4.1 presents the response rate.

**Table 4. 1: Response Rate**

<b>Questionnaires</b>	<b>Frequency</b>	<b>Percent (%)</b>
Returned	297	77.3
Unreturned	87	22.7
<b>Distributed</b>	<b>384</b>	<b>100.0</b>

### **4.3 Diagnostic Tests**

#### **4.3.1 Test for Normality**

Skewness measures the degree of asymmetry of a distribution around its mean. Positive skewness indicates a distribution with an asymmetric tail extending toward more positive values. Negative skewness indicates a distribution with an asymmetric tail extending towards more negative values. Kurtosis measures the degree to which a distribution is more or less peaked than a normal distribution. Positive kurtosis indicates a relatively peaked distribution. Negative kurtosis indicates a relatively flat distribution. Skewness and kurtosis were used to measure symmetric distribution and peakness of a distribution respectively (Lall, 2001).

Creswell (2014) opine the rule of thumb that Skewness values ranging from -1 to 1 and Kurtosis values between -2 and +2 are deemed satisfactory as a show of normal univariate distribution. They add that Kurtosis value ranging from 7.0 to 21.00 reveal moderate normality, while values above 21.00 reveal extreme lack of normality. The skewness and kurtosis are within the expected ranges of chance fluctuations in that statistics (i.e.  $\pm$  SES and  $\pm$ SEK) this implies that the distribution has no significant skewness and kurtosis problem. Accordingly, the score of skewness and kurtosis on each item was analyzed and reported. Items found to lack normality were evaluated and accordingly, either transformed using log-transformation or removed from further analysis. All items were found to be within the acceptable range.

**Table 4. 2: Test for Normality**

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Pricing of mobile led financial services	-1.22	.38	.57	.75
Service investment	-1.23	.38	1.96	.75
Size of the firm	-1.38	.38	2.35	.75
Efficiency of mobile led financial services	-1.02	.38	.95	.75
Financial Inclusion	-.67	.38	-.62	.75

**4.3.2 Test of Multicollinearity**

After the normality of the data in the regression model is met, the determination as to whether there is similarity between the independent variables in a model is done. It is thus necessary to perform multicollinearity test. Similarities between the independent variables will result in a very strong correlation. In addition, multicollinearity test is done to avoid habits in the decision-making process regarding the partial effect of independent variables on the dependent variables.

Multicollinearity refers to the linear correlation among variables. It occurs when two or more predictors in the model are correlated and provide redundant information about a response. This can bring a problem because it leads to increased standard error of estimates and it can give misleading and confusing results in a study. Moderate multicollinearity may not be a problem but a severe one can increase the variance of the coefficient of estimates and make them sensitive to minor changes.

To check for correlated variables, multicollinearity was tested using variance inflation factor (VIF). A VIF for all the independent and dependent variables less

than 3 ( $VIF \leq 3$ ) shows no multicollinearity while a VIF of more than 10 ( $VIF \geq 10$ ) indicates a problem of multicollinearity (Cohen, 2003). Multicollinearity creates a problem for multiple regression models given that as collinearity increases the standard error of coefficients also increases making them less reliable. In this regard, the present study performed a multicollinearity test with a view to identify variables with a high correlation among themselves. All variables were found to be optimally correlated.

**Table 4. 3: Test of Multicollinearity**

<b>Model</b>	<b>VIF</b>
Pricing of mobile led financial services	1.63
Service investment	1.13
Size of the firm	1.14
Efficiency of mobile led financial services	1.19
Financial Inclusion	1.04

#### **4.3.3 Test of Independence of Errors**

The assumption of independence of errors requires that the residuals or errors in prediction do not follow a pattern from case to case. Greene (2008) indicates that Durbin-Watson statistic is used to measure the correlation of residuals. The correlation means the existence of some definite relationship between two or more variables. Durbin-Watson statistics is a test for autocorrelation, which is based on the assumption of time series. It should be close to two or more to show lack of autocorrelation. The size of Durbin Watson statistic which depends on the number of predictors and number of observation, as conservative rule of thumb, values less than one or greater than three are definitely cause for concern (Okutoyi, 2013).



The accepted range for Durbin-Watson statistic is 1.50–2.50. The inspection of Durbin-Watson statistic revealed a value of 2.310, which falls within the acceptable range. This indicates that the residuals are not correlated.

**Table 4. 4: Durbin-Watson Test of Independence of Errors**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>	<b>Durbin-Watson</b>
1	.865 <sup>a</sup>	.748	.720	1.94285	2.310

a. Predictors: (Constant), Pricing of mobile led financial services, Service investment, Size of the firm and Efficiency of mobile led financial services

b. Dependent Variable: Financial Inclusion

#### **4.4 Descriptive Results**

The study investigated four conceptualized components of competitiveness of mobile led financial services and their influence on financial inclusion in Kenya. These include pricing of mobile led financial services, service investment, firm size and efficiency of mobile led financial services. The descriptive statistics thereof are hereby presented in form of means and standard deviations.

##### **4.4.1 Influence of Pricing on Financial Inclusion in Kenya**

The study sought to establish the influence of pricing of mobile led financial services on financial inclusion in Kenya. To this end, respondents were asked to respond to pertinent statements posed by indicating the level at which they agreed with the same, as applied in their respective cases. Responses were given on a five-point Likert scale (where 1= Strongly Disagree; 2 = Disagree; 3 = neutral; 4 = Agree; 5 = Strongly Agree). The mean scores of 0 to 2.5 have been taken to represent statements dissented upon by a majority of respondents while mean scores of between 2.6 to 5.0 have been taken to represent statements agreed upon by a majority of respondents. The strengths in disagreement or agreement are represented by the respective

strengths of the mean scores, descending for disagreement and ascending for agreement. Table 4.5 presents the findings.

**Table 4. 5: Pricing of Mobile Led Financial Services and Financial Inclusion in Kenya**

<b>Statement</b>	<b>Mean</b>	<b>Std. Dev</b>
1. Our pricing is done with the aim of maintaining the relationship we have with our customers	4.39	.69
2. Our pricing strategies for introducing financial innovations such as the mobile led financial services have taken into account the market forces that are at work	4.34	.79
3. The price of our services has attracted more customers into our institution.	4.39	.62
4. Our competitors have not been able to imitate the financial innovation that we have adopted	4.37	.65
5. Lower prices may lead to faster diffusion processes and therefore increase the market penetration of the innovator in advance of competitive entry to the market	4.34	.75
6. The optimal introductory price of a financial innovation can be affected by the degree of price sensitivity evident in the marketplace	4.38	.6932
7. The lack of ability to understand financial services offered and the associated prices has in some markets resulted in low levels of price sensitivity	4.54	.64

As tabulated in Table 4.5, a majority of respondents highly agreed with statements posed with respect to the influence of pricing of mobile led financial services on financial inclusion in Kenya. More specifically, a majority of respondents highly agreed that the lack of ability to understand financial services offered and the associated prices has in some markets resulted in low levels of price sensitivity (4.54); the price of the firm’s services has attracted more customers into their institution (4.39); the firm’s pricing is done with the aim of maintaining the relationship they have with their customers (4.39); the optimal introductory price of a financial innovation can be affected by the degree of price sensitivity evident in the marketplace (4.38); the firm’s competitors have not been able to imitate the financial innovation that they have adopted (4.37); the firm’s pricing strategies for introducing financial innovations such as the mobile led financial services have taken into

account the market forces that are at work (4.34); and that lower prices may lead to faster diffusion processes and therefore increase the market penetration of the innovator in advance of competitive entry to the market (4.34).

The finding is in agreement with Dusansky and Koc (2010) who found that the unique nature of consumers' response patterns to prices in specific financial services markets may have strategic pricing implications that need to be considered when pricing financial innovations. The finding also agrees with Murthi et al. (2011) who report that the optimal introductory pricing of a financial innovation can also be affected by the length of time it takes for competitors to introduce their own financial solutions that match the capabilities of the innovation; and that Some financial solutions may be protected from competitive entry because of entry barriers.

#### **4.4.2 Influence of Service investment on Financial Inclusion in Kenya**

The study sought to determine the influence of service investment on financial inclusion in Kenya. To this end, respondents were asked to respond to pertinent statements posed by indicating the level at which they agreed with the same, as applied in their respective cases. Responses were given on a five-point Likert scale (where 1= Strongly Disagree; 2 = Disagree; 3 = neutral; 4 = Agree; 5 = Strongly Agree). The mean scores of 0 to 2.5 have been taken to represent statements dissented upon by a majority of respondents while mean scores of between 2.6 to 5.0 have been taken to represent statements agreed upon by a majority of respondents. The strengths in disagreement or agreement is represented by the respective strengths of the mean scores, descending for disagreement and ascending for agreement. Table 4.6 presents the findings.

**Table 4. 6: Service investment and Financial Inclusion in Kenya**

<b>Statement</b>	<b>Mean</b>	<b>Std. Dev</b>
1. We have heavily invested in the adoption and sustenance of mobile led financial services	3.94	.74
2. The organization has approached the mobile financial services with caution due to concerns about limited opportunities for revenue	3.41	.92
3. There is a belief that mobile payments could cannibalize existing electronic payment services, providing limited return on investment.	3.17	.68
4. The mobile channel can help us reduce transaction costs as well as increase customer engagement and retention	4.04	.64
5. We are adding value to customer depository services with the addition of mobile technology and realizing customer retention benefits as a result	4.20	.89
6. The institution is addressing shrinking profits by engaging customers in new ways to stay relevant, increase revenue and brand loyalty	4.34	.846
7. Mobile led financial services have improved customer retention and reduced cost per transaction	4.35	.46

As presented in Table 4.6, a majority of respondents highly agrees that Mobile led financial services have improved customer retention and reduced cost per transaction (4.35); the institution is addressing shrinking profits by engaging customers in new ways to stay relevant, increase revenue and brand loyalty (4.34); the firm is adding value to customer depository services with the addition of mobile technology and

realizing customer retention benefits as a result (4.20); the mobile channel can help the firm reduce transaction costs as well as increase customer engagement and retention (4.04); the firm has heavily invested in the adoption and sustenance of mobile led financial services (3.94); the organization has approached the mobile financial services with caution due to concerns about limited opportunities for revenue (3.41) and that there is a belief that mobile payments could cannibalize existing electronic payment services, providing limited return on investment (3.17).

The finding is in tandem with Aker and Mbiti (2013), Mbiti and Weil (2013) and Mbogo (2014) who report that in recent years, mobile money services have been extended to offer financial services for formal financial products (savings, credit, insurance), informal service providers (moneylenders), personal networks (on-demand, scheduled payments, sending and receiving money), in-store merchant payments (goods and services), and remote B2C/C2B payments (salaries, pensions, loan disbursements, bill payments, online/e-commerce). Accordingly, Ndung'u et al. (2012) argues that governments have also started using mobile money transfer services for making payments to citizens (e.g. salaries and pensions) and to collect revenues such as taxes.

#### **4.4.3 Influence of Firm Size on Financial Inclusion in Kenya**

The study sought to examine the influence of firm size on financial inclusion in Kenya. To this end, respondents were asked to respond to pertinent statements posed by indicating the level at which they agreed with the same, as applied in their respective cases. Responses were given on a five-point Likert scale (where 1= Strongly Disagree; 2 = Disagree; 3 = neutral; 4 = Agree; 5 = Strongly Agree). The mean scores of 0 to 2.5 have been taken to represent statements dissented upon by a majority of respondents while mean scores of between 2.6 to 5.0 have been taken to represent statements agreed upon by a majority of respondents. The strengths in disagreement or agreement is represented by the respective strengths of the mean

scores, descending for disagreement and ascending for agreement. Table 4.7 presents the findings.

**Table 4.7: Firm Size on Financial Inclusion in Kenya**

<b>Statement</b>	<b>Mean</b>	<b>Std. Dev</b>
1. Larger firms tend to be more diversified and fail less often so size can be an inverse proxy for the probability of bankruptcy	4.21	.89
2. It may be relatively costlier for smaller firms to resolve information asymmetries with debt providers	4.53	.59
3. Transaction costs are typically a function of scale and may be higher for smaller firms.	4.51	.54
4 Small firms have fewer opportunities to raise capital because capital markets are out of reach due to their size	4.35	.84
5. In the presence of non-trivial fixed costs of raising external funds large firms have cheaper access to outside financing per dollar borrowed.	4.55	.69
6. Profitable firms have higher access to finance given the assurance it gives to the lenders on financial sustainability	4.54	.65
7. Small borrowers borrow frequently and repay in small installments	4.40	.73

From the findings, the respondents highly agreed that in the presence of non-trivial fixed costs of raising external funds large firms have cheaper access to outside financing per dollar borrowed (4.56); profitable firms have higher access to finance given the assurance it gives to the lenders on financial sustainability (4.54); it may be relatively more costly for smaller firms to resolve information asymmetries with debt providers (4.53); transaction costs are typically a function of scale and may be higher for smaller firms (4.52); small borrowers borrow frequently and repay in small installments (4.40); small firms have fewer opportunities to raise capital because



capital markets are out of reach due to their size (4.36); and that larger firms tend to be more diversified and fail less often so size can be an inverse proxy for the probability of bankruptcy (4.22).

The findings agree with Honhyan (2009) findings that larger firms tend to be more diversified and fail less often, so size can be an inverse proxy for the probability of bankruptcy. Cassar (2004) argues that it may be relatively more costly for smaller firms to resolve information asymmetries with debt providers. Consequently, smaller firms may be offered less debt capital. In addition, transaction costs are typically a function of scale and may be higher for smaller firms. It is also possible that small firms have fewer opportunities to raise capital because capital markets are out of reach due to their size.

#### **4.4.4 Influence of Efficiency of Mobile Led Financial Services on Financial Inclusion in Kenya**

The study sought to assess the influence of efficiency of mobile led financial services on financial inclusion in Kenya. To this end, respondents were asked to respond to pertinent statements posed by indicating the level at which they agreed with the same, as applied in their respective cases. Responses were given on a five-point Likert scale (where 1= Strongly Disagree; 2 = Disagree; 3 = neutral; 4 = Agree; 5 = Strongly Agree). The mean scores of 0 to 2.5 have been taken to represent statements dissented upon by a majority of respondents while mean scores of between 2.6 to 5.0 have been taken to represent statements agreed upon by a majority of respondents. The strengths in disagreement or agreement is represented by the respective strengths of the mean scores, descending for disagreement and ascending for agreement. Table 4.8 presents the findings.

**Table 4. 8: Efficiency on Financial Inclusion in Kenya**

<b>Statement</b>	<b>Mean</b>	<b>Std. Dev</b>
1. Banks can realize operational efficiencies by adopting an integrated channel strategy that includes mobile banking	4.47	.68
2. Mobile led financial services can lead to closure of poorly performing branches and increase operating efficiencies by shifting the focus of branch employees from transactions to more advisory-type services	4.32	.50
3. The addition of mobile phone technology has improved the efficiency of financial transactions and reduced operational costs	4.29	.84
4. Mobile phone technology has provided more frequent opportunities to open and access member accounts in real time during field officer visits	4.39	.69
5. The lower costs and efficiencies associated with mobile transactions could change the economics of serving the underserved	4.34	.70
6. Restructuring branches could provide banks an opportunity to improve efficiency	4.37	.62
7. Using mobile technology has been contributing in improving efficiency of banks, and financial inclusion.	4.20	.77

The respondents agreed that banks can realize operational efficiencies by adopting an integrated channel strategy that includes mobile banking (4.47); mobile phone technology has provided more frequent opportunities to open and access member accounts in real time during field officer visits (4.39); restructuring branches could provide banks an opportunity to improve efficiency (4.37); the lower costs and efficiencies associated with mobile transactions could change the economics of serving the underserved (4.34); mobile led financial services can lead to closure of poorly performing branches and increase operating efficiencies by shifting the focus of branch employees from transactions to more advisory-type services (4.32); the addition of mobile phone technology has improved the efficiency of financial transactions and reduced operational costs (4.29); and that using mobile technology has been contributing in improving efficiency of banks, and financial inclusion (4.20).

The finding is in agreement with Okutoyi (2013) who demonstrated the effects of using mobile money in the improvement in information flow between transacting parties allowing efficiency between the trading without travelling. This was noted particularly for users in rural areas where traders would have needed to travel to urban areas to send and receive money. Hence, mobile money usage results in the reduction in transportation cost and consequently increased consumer surplus. The finding also agrees with Njenga (2014) found that mobile communication networks enable information to move freely, enabling markets to be more efficient thereby unleashing entrepreneurship and consequently leading to financial innovation that allows mobile phones to be used as gateways to financial access by the previously unbanked rural communities.

#### **4.4.5 Financial Inclusion of Mobile Led Financial Services in Kenya**

The study sought to establish the extent of financial inclusion attributable to the competitiveness of mobile led financial services in Kenya. To this end, respondents were asked to respond to pertinent statements posed by indicating the level at which they agreed with the same, as applied in their respective cases. Responses were given on a five-point Likert scale (where 1= Strongly Disagree; 2 = Disagree; 3 = neutral; 4 = Agree; 5 = Strongly Agree). The mean scores of 0 to 2.5 have been taken to represent statements dissented upon by a majority of respondents while mean scores of between 2.6 to 5.0 have been taken to represent statements agreed upon by a majority of respondents. The strengths in disagreement or agreement is represented by the respective strengths of the mean scores, descending for disagreement and ascending for agreement. Table 4.9 presents the findings.

**Table 4. 9: Financial Inclusion of Mobile Led Financial Services in Kenya**

<b>Statement</b>	<b>Mean</b>	<b>Std. Dev</b>
1. Through competitiveness of mobile led financial services people in rural areas can now access mobile banking services	4.37	.83
2. Competitiveness of mobile led financial services has led to increase saving habits	4.02	.32
3. Competitiveness of mobile led financial services has led to enhanced asset ownership	4.02	.82
4. Competitiveness of mobile led financial services has led to improved purchasing power	4.07	.66
5. Competitiveness of mobile led financial services has led to declined income inequality	4.00	.33
6. Mobile banking has the ability to reach the ‘unbanked’ sectors of the economy	4.20	.75
7. Most people have taken up M-banking because it is cheaper than traditional banking systems	4.16	.87
8. Most people have taken up M-banking because of the zero-deposit required to maintain a non-bank led M-banking account which only charges transaction fees	4.47	.77
9. Most people have taken up M-banking because the transaction cost is considered lower than any other alternative	4.35	.67
10. The clearest direct benefits of mobile money are greater convenience, faster speed, and lower cost of transferring funds	4.46	.64

As presented in Table 4.9, a majority of respondents highly agrees that most people have taken up M-banking because of the zero deposit required to maintain a non-bank led M-banking account which only charges transaction fees (4.47); the clearest direct benefits of mobile money is greater convenience, faster speed, and lower cost of transferring funds (4.46); through competitiveness of mobile led financial services people in rural areas can now access mobile banking services (4.37); most people have taken up M-banking because the transaction cost is considered lower than any other alternative (4.35); mobile banking has the ability to reach the ‘unbanked’ sectors of the economy (4.20); most people have taken up M-banking because it is cheaper than traditional banking systems (4.16); Competitiveness of mobile led

financial services has led to improved purchasing power (4.07); Competitiveness of mobile led financial services has led to increase saving habits (4.02); Competitiveness of mobile led financial services has led to enhanced asset ownership (4.02); and that Competitiveness of mobile led financial services has led to declined income inequality (4.00).

The findings are in line with Manning (2001) argument that mobile money provides that the issue of accessibility of financial services providers has been a cause for concern for the RBZ which has been calling for banks and Microfinance institutions to open outlets in rural areas so that the ‘unbanked’ people could join the main stream economy. The finding is also in agreement with Klein and Mayer (2011) who offer that mobile banking has the ability to reach the ‘unbanked’ sectors of the economy, for as long as there is mobile connectivity and the capturing of this market increases the participants in the financial services sector. Similarly, Kusa and Ongore (2013) argue that mobile banking provides greater financial intermediation of the economy as a whole or financial deepening which then drives demand.

#### **4.5 Inferential Statistics**

The study used inferential statistics such as correlation analysis and multiple regression analysis to assess the effect of the independent variables (pricing of mobile led financial services, service investment, firm size and efficiency of mobile led financial services) and the dependent variable, financial inclusion.

##### **4.5.1 Pearson Correlation Results**

The study also set out to test four null hypotheses: Pricing of mobile led financial services has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya ( $H_{01}$ ); service investment has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya ( $H_{02}$ ); firm size has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya ( $H_{03}$ ); and efficiency of

mobile led financial services has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya (H<sub>04</sub>). To test these hypotheses, the study performed inferential analysis, consisting of both Pearson Correlation and Regression Analyses. Maina et al., (2016) argued Karl Pearson Correlation Coefficient is the most widely used method of measuring the degree of relationship between variables. This ranges from -1 to +1, where -1 indicates a perfect negative correlation, 0 no correlation and +1 a perfect positive correlation. This assists a researcher in determining the magnitude and direction of the relationship between variables.

Table 4.10 presents the Pearson correlations for the relationships between the various competitive mobile led financial services aspects and financial inclusion.

**Table 4. 10: Pearson Correlation Matrix**

<b>Variables</b>	<b>Financial Inclusion</b>	<b>Pricing of mobile led financial services</b>	<b>Service investment</b>	<b>Firm Size</b>	<b>Efficiency of mobile led financial services</b>
Financial Inclusion	1				
Pricing of mobile led financial services	.798** (.000)	1			
Service investment	.436** (.002)	.250 (.341)	1		
Firm Size	.716** (.001)	.324 (.212)	.300 (.060)	1	
Efficiency of mobile led financial services	.708** (.002)	.485 (.058)	.115 (.099)	.192 (.421)	1

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

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

From the findings, a positive correlation is seen between each component of competitiveness aspect and financial inclusion. The strongest correlation was obtained between pricing of mobile led financial services and financial Inclusion ( $r = 0.798$ ) and the weaker relationship found between service investment and financial Inclusion ( $r = 0.436$ ). Mwangi and Sichei (2013) indicate that micro enterprise operators in Kenya have adopted the use of the mobile payments as a way of transacting their business because of the relative affordability of mobile phones and the mobile banking services they offer.

Firm size and efficiency of mobile led financial services are also strongly and positively correlated with financial inclusion at correlation coefficient of 0.716 and 0.708 respectively. These findings are in line with Ndung'u et al. (2012) argument that governments have also started using mobile money transfer services for making payments to citizens (e.g. salaries and pensions) and to collect revenues such as taxes. In addition, Aduda and Kalunda (2012) found that insurance, credit, and savings services are now being developed atop mature mobile money systems. All the independent variables were found to have a statistically significant association with the dependent variable at 0.01 level of confidence.

#### **4.5.2 Univariate Regression Results per Independent Variable**

A correlation coefficient indicates the relationship between variables, it does not imply any causal relationship between variables and hence the need for further statistical analysis such as regression analysis to help establish specific nature of the relationships. In this section, regression analysis for each independent variable and the depended variable was conducted. The aim of this analysis is to identify those variables simultaneously associated with a dependent variable and to estimate the separate and distinct influence of each variable on the dependent variable. This was then followed by the multiple regression analysis for all the independent variables and the dependent variable.

The R-Squared is the variance proportion in the dependent variable that can be explained by the independent variable: the larger the R-squared the larger the effect of the independent variable on the dependent variable. The R Square can range from 0.000 to 1.000, with 1.000 showing a perfect fit that indicates that each point is on the line.

The analysis of variance is used to determine whether the regression model is a good fit for the data. It also gives the F-test statistics, the linear regression's F-test has the null hypothesis that there is no linear relationship between the two variables.

The coefficients or beta weights for each variable allows the researcher to compare the relative importance of each independent variable. In this study, the unstandardized coefficients and standardized coefficients are given for the multiple regression equations. However, discussions are based on the unstandardized coefficients.

#### **(a) Pricing and Financial Inclusion**

A univariate analysis was conducted to investigate the influence of pricing of mobile money services on financial inclusion among commercial banks and mobile service providers in Kenya. The null hypothesis was;

**H<sub>0</sub>1:** Pricing of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

As indicated in table 4.11, the r-squared for the relationship between pricing of mobile money services and financial inclusion in Kenya was 0.242. This shows that pricing of mobile money services can explain 24.2% of the financial inclusion in Kenya.



**Table 4. 11: Model Summary of Pricing of Mobile Led Financial Services and Financial Inclusion**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.492 <sup>a</sup>	.242	.240	.41177

a. Predictors: (Constant), Pricing of mobile led financial services

As shown in table 4.12, the F-calculated (94.265) was greater than the F-critical (3.84) and the p-value (0.000) was less than the significance level (0.05), which implies that the linear regression model is a good fit for the data and hence can be used to predict the effect of pricing of mobile money services on financial inclusion among commercial banks and mobile service providers in Kenya.

**Table 4. 12: ANOVA for Pricing of Mobile Led Financial Services and Financial Inclusion**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.983	1	15.983	94.265	.000 <sup>b</sup>
	Residual	50.018	295	.170		
	Total	66.001	296			

a. Dependent Variable: Financial inclusion

b. Predictors: (Constant), Pricing

As indicated in table 4.13, these findings show that the financial inclusion in Kenya will be having an index of 1.852 when pricing of mobile money services is held constant. In addition, the Beta coefficient was (-0.263) for the relationship between pricing of mobile money services and financial inclusion among commercial banks and mobile service providers in Kenya. This shows that a unit increase in pricing of mobile money services would lead to a 0.263 decrease in financial inclusion in commercial banks and mobile service providers in Kenya. The relationship is

significant as the P-value (0.000) was less than the significance level (0.05). In addition, the t-calculated (-9.709) was more than the t-critical (2.626). Therefore, we can accept the alternative hypothesis that “pricing of mobile led financial services has a significant influence on financial inclusion among commercial banks and mobile service providers in Kenya”. These findings agreed with Mbogo (2014) findings that an inverse correlation between transactions costs and the behavioral intention to use the mobile payment services and hence financial inclusion.

**Table 4. 13: Coefficients for Pricing of Mobile Led Financial Services and Financial Inclusion**

Model		Unstandardized Coefficients		Standardize	t	Sig.
		B	Std. Error	d		
1	(Constant)	1.852	.096		19.213	.000
	Pricing	-.263	.027	-.492	-9.709	.000

a. Dependent Variable: Financial inclusion

**(b) Service investment and Financial Inclusion**

The study also used univariate analysis to assess the influence of service investment on financial inclusion among commercial banks and mobile service providers in Kenya. The null hypothesis was;

**H<sub>02</sub>:** Service investment has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

According to the findings, the r-squared for the relationship between service investment and financial inclusion in Kenya was 0.115. This implies that service investment explains 11.5% of the financial inclusion in Kenya.

**Table 4. 14: Model Summary for Service investment and Financial Inclusion**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.340 <sup>a</sup>	.115	.112	.44490

a. Predictors: (Constant), Service investment

As indicated in Table 4.15, the F-calculated (38.443) is greater than the F-critical (3.84) and the p-value (0.000) is less than the significance level (0.05). This shows that the univariate regression model is a good fit for the data and hence can be used in predicting the influence of service investment on financial inclusion among commercial banks and mobile service providers in Kenya.

**Table 4. 15: ANOVA for Service investment and Financial Inclusion**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.609	1	7.609	38.443	.000 <sup>b</sup>
	Residual	58.391	295	.198		
	Total	66.001	296			

a. Dependent Variable: Financial inclusion

b. Predictors: (Constant), Service investment

As indicated in table 4.16, the results show that holding service investment constant, the financial inclusion in Kenya will be 2.020. In addition, the beta coefficient for the association between service investment and financial inclusion in Kenya is 0.184. This implies that a unit increase in service investment would lead to 0.184 increase in financial inclusion among commercial banks and mobile service providers in Kenya. The p-value (0.000) was less than the significance level (0.05). In addition, the t-calculated (6.200) was more than the t-critical (2.626). Therefore, we can accept the alternative hypothesis that “service investment has a significant influence on financial inclusion among commercial banks and mobile service providers in

Kenya”. The finding is in tandem with Aker and Mbiti (2014), Mbiti and Weil (2013) and Mbogo (2014) who report that in recent years, mobile money services have been extended to offer financial services for formal financial products (savings, credit, insurance), informal service providers (moneylenders), personal networks (on-demand, scheduled payments, sending and receiving money), in-store merchant payments (goods and services), and remote B2C/C2B payments (salaries, pensions, loan disbursements, bill payments, online/e-commerce).

**Table 4.16: Coefficients for Service investment and Financial Inclusion**

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
1 (Constant)	2.020	.122		16.590	.000
Service investment	.184	.030	.340	6.200	.000

a. Dependent Variable: Financial inclusion

### (c) Firm Size and Financial Inclusion

Univariate analysis was used to examine the influence of firm size on financial inclusion in Kenya. The null hypothesis was;

**H<sub>03</sub>:** Firm size has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

As indicated in table 4.17, the r-squared for the association between firm size and financial inclusion in Kenya was 0.114. This implies that firm size can explain 11.4% of financial inclusion among commercial banks and mobile service providers in Kenya.

**Table 4. 17: Model Summary for Firm Size and Financial Inclusion**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.337 <sup>a</sup>	.114	.111	.44534

a. Predictors: (Constant), Firm size

According to the findings, the F-calculated (37.781) is greater than the F-critical (3.84) and the p-value (0.000) is less than the significance level (0.05). This shows that the univariate regression model is a good fit for the data and hence can be used in predicting the influence of firm size on financial inclusion among commercial banks and mobile service providers in Kenya.

**Table 4.18: ANOVA for Firm Size and Financial Inclusion**

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	7.493	1	7.493	37.781	.000 <sup>b</sup>
1	Residual	58.507	295	.198		
	Total	66.001	296			

a. Dependent Variable: Financial inclusion

b. Predictors: (Constant), Firm size

As indicated in table 4.19, the results show that holding firm size constant, financial inclusion in Kenya will be 1.998. In addition, the beta coefficient for the association between firm size and financial inclusion among commercial banks and mobile service providers in Kenya is 0.215. This implies that a unit increase in firm size would lead to 0.215 improvement in financial inclusion in Kenya. The p-value (0.000) was less than the significance level (0.05). Further, the t-calculated (6.147) was more than the t-critical (2.626). Therefore, we can accept the alternative hypothesis that “firm size has a significant influence on financial inclusion among commercial banks and mobile service providers in Kenya”. The study findings also

agree with Beck and Demirguc-Kunt (2006) who argue that large firms have an advantage of easier access to credit and development funds, while small firms have to use more equity and informal sources of financing.

**Table 4.19: Coefficients for Firm Size and Financial Inclusion**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.998	.126		15.828	.000
	Firm size	.215	.035	.337	6.147	.000

a. Dependent Variable: Financial inclusion

**(d) Efficiency of Mobile Led Financial Services and Financial Inclusion**

The study also used univariate analysis to assess the influence efficiency of mobile led financial services on financial inclusion in Kenya. The null hypothesis was;

**H<sub>04</sub>:** Efficiency of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

As indicated in table 4.20, the r-squared for the association between efficiency of mobile money services and financial inclusion among commercial banks and mobile service providers in Kenya was 0.176. This implies that efficiency of mobile money services can explain 17.6% of financial inclusion in Kenya.

**Table 4.20: Model Summary for Efficiency and Financial Inclusion**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.420 <sup>a</sup>	.176	.174	.42927

a. Predictors: (Constant), Efficiency of mobile led financial services

According to the findings, the F-calculated (63.169) is greater than the F-critical (3.84) and the p-value (0.000) is less than the significance level (0.05). This shows

that the univariate regression model is a good fit for the data and hence can be used in predicting the influence of efficiency of mobile money services on financial inclusion among commercial banks and mobile service providers in Kenya.

**Table 4.21: ANOVA for Efficiency and Financial Inclusion**

<b>Model</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1 Regression	11.640	1	11.640	63.169	.000 <sup>b</sup>
Residual	54.360	295	.184		
Total	66.001	296			

a. Dependent Variable: Financial inclusion

b. Predictors: (Constant), Efficiency of mobile led financial services

As indicated in table 4.22 the results show that holding efficiency of mobile money services constant, financial inclusion among commercial banks and mobile service providers in Kenya will be 2.149. In addition, the beta coefficient for the association between efficiency of mobile money services and financial inclusion among commercial banks and mobile service providers in Kenya is 0.211. This implies that a unit improvement in efficiency of mobile money services would lead to 0.211 improvement in financial inclusion in Kenya. The p-value (0.000) was less than the significance level (0.05). Further, the t-calculated (7.948) was more than the t-critical (2.626). Therefore, we can accept the alternative hypothesis that “efficiency of mobile money services has a significant influence on financial inclusion among commercial banks and mobile service providers in Kenya”. The finding is in agreement with Okutoyi (2013) who demonstrated the effects of using mobile money in the improvement in information flow between transacting parties allowing efficiency between the trading without travelling. This was noted particularly for users in rural areas where traders would have needed to travel to urban areas to send and receive money. Hence, mobile money usage results in the reduction in transportation cost and consequently increased consumer surplus.

**Table 4.22: Coefficients for Efficiency of Mobile Led Financial Services and Financial Inclusion**

Model		Unstandardized		Standardized t		Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	2.149	.081		26.675	.000
	Efficiency	.211	.027	.420	7.948	.000

a. Dependent Variable: Financial inclusion

### 4.5.3 Multiple Regression Results

To establish the degree of influence of the various components of competitiveness of mobile led financial services and financial inclusion, regression analyses were conducted among the variables, with the assumption that: variables are normally distributed to avoid distortion of associations and significance tests, which was achieved as outliers were not identified; a linear relationship between the independent and dependent variables for accuracy of estimation, which was achieved as the standardized coefficients were used in interpretation.

The regression model was as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

$\alpha$  = Constant

$X_1$  = Pricing of mobile led financial services

$X_2$  = Service investment

$X_3$  = Size of the firm

$X_4$  = Efficiency of mobile led financial services

$\epsilon$  = Error term



To test the four hypotheses all at once, the multiple linear regression model was done in SPSS version 24.0 which included independent variables so as to determine the required coefficients and p-values for establishing significance. To form the basis of testing the hypotheses set, the test was done at significance level of  $p < 0.05$  such that when p-value was more than the significant level, the model was considered insignificant.

The coefficient of multiple determinants denoted by  $R^2$ , is a measure of proportion of the variation of the regress as explained by the corresponding explanatory variables. The value of  $R^2$  lies between zero and unity  $0 \leq R^2 \leq 1$ . A value of unity implies that 100% of the variations of Y have been explained by the explanatory variables. On the other hand, a value of zero implies that no variations have been explained at all (Ithaka, 2013). The overall goodness of fit was obtained through regressing the goodness of fit for all the independent variables and the results are depicted in Table 4.23.

The result showed a coefficient of determination value (R) of 0.865 which depicts a strong linear dependence between all the competitive aspects and financial inclusion. With an adjusted R-square of 0.720, the model shows that pricing of mobile led financial services, service investment, efficiency of mobile led financial services and firm size collectively explain 72.0% of the variations in the financial inclusion among commercial banks and mobile service providers in Kenya, while 28.0% is explained by other factors not included in the model.

**Table 4.23: Overall Goodness of Fit Model (Regression Analysis)**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.865 <sup>a</sup>	.748	.720	1.94285

a. Predictors: (Constant), Pricing of mobile led financial services, Service investment, Firm Size, Efficiency of mobile led financial services.

Regression analysis produces the coefficients of determination and Analysis of Variance (ANOVA). Analysis of variance was done to show whether there is a significant mean difference between dependent and independent variables. That is to say, it was used to test whether the regression analysis model used is fit or the relationship of the variables just occurred by chance. The significance of F ratio is used to determine whether the model used was fit or not. The ANOVA was conducted at 95% confidence level.

The ANOVA test was done to test the overall significance of the variables pricing, service investment, size of the firm and efficiency having an influence on financial inclusion among commercial banks and mobile service providers in Kenya. Table 4.24 presents the results of the analysis. The overall ANOVA indicate F-calculated of the overall regression model was 216.436,  $df = (4, 292)$ , which is greater than the F-critical (2.463). In addition, the p-value (0.000) was less than the significance level (0.05). These findings imply that the model was appropriate in predicting the effect of pricing, service investment, firm size and efficiency on financial inclusion among commercial banks and mobile service providers in Kenya.

**Table 4.24: Overall ANOVA (Regression Analysis)**

<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	402.892	4	100.7230	216.436	.000 <sup>a</sup>
	Residual	135.888	292	0.4654		
	Total	538.78	296			

a. Predictors: (Constant), Pricing of mobile led financial services, Service investment, Firm Size, Efficiency of mobile led financial services.

b. Dependent Variable: Financial Inclusion

The coefficients table 4.25 provides the necessary information to predict the influence of the independent variables on the dependent variable, as well as determine whether the independent variables contribute statistically significantly to the model. Furthermore, the values in the "B" column under the "Unstandardized Coefficients" column show the weight of the independent variables influence on the dependent variable.

$$Y = 8.001 - (2.435) X_1 + (.336) X_2 + (.610) X_3 + (1.576) X_4$$

Where:

Y = Financial Inclusion;

X<sub>1</sub> = Pricing of mobile led financial services

X<sub>2</sub> = Service investment

X<sub>3</sub> = Firm Size

X<sub>4</sub> = Efficiency of mobile led financial services

A unit change in pricing of mobile led financial services would thus lead to a 2.435 decrease in financial inclusion among commercial banks and mobile service

providers in Kenya. The relationship is statistically significant at a P value of 0.000(<0.05). In addition, the t-calculated (-7.681) was more than the t-critical (2.364). The study thus fails to accept the first null hypothesis that states that pricing of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya ( $H_{01}$ ) and concludes that there is exists a significant relationship between pricing and financial inclusion among commercial banks and mobile service providers in Kenya. The finding is in agreement with Dusansky and Koc (2010) who found that the unique nature of consumers' response patterns to prices in specific financial services markets may have strategic pricing implications that need to be considered when pricing financial innovations.

It was also established that a unit change in service investment would lead to a 0.336 increase in financial inclusion among commercial banks and mobile service providers in Kenya. At a P value of 0.021 (<0.05), the relationship was found to be statistically significant. In addition, the t-calculated (2.545) was more than the t-critical (2.364). In light of this, the study also fails to accept the second null hypothesis of the study that states that service investment has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya ( $H_{02}$ ). In this regard, the study deduces that there exists a significant relationship between service investment and financial inclusion among commercial banks and mobile service providers in Kenya. These findings are in agreement with Aduda and Kalunda (2012) findings that insurance, credit, and savings services are now being developed atop mature mobile money systems.

A unit change in firm size would lead to a 0.610 increase in financial inclusion among commercial banks and mobile service providers in Kenya. The relationship was found to be statistically significant at a P value of 0.005 (<0.05) implying that there exists a significant relationship between firm size and financial inclusion among commercial banks and mobile service providers in Kenya. In addition, the t-

calculated (2.798) was more than the t-critical (2.364). The study thus fails to accept the third null hypothesis of the study that states that firm size has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya ( $H_{03}$ ) and concludes that there exists a significant relationship between firm size and financial inclusion among commercial banks and mobile service providers in Kenya. These findings agree with Honhyan (2009) findings that firm size had a significant influence on financial inclusion.

Finally, a unit change in efficiency of mobile led financial services would lead to a 1.576 increase in financial inclusion among commercial banks and mobile service providers in Kenya. With a P value of 0.000 ( $<0.05$ ), the study also fails to accept the fourth null hypothesis of the study that states that efficiency of mobile led financial services has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya ( $H_{04}$ ) and concludes that there is a significant relationship between efficiency and financial inclusion among commercial banks and mobile service providers in Kenya. In addition, the t-calculated (5.731) was more than the t-critical (2.364). These findings are in line with Munjogu and Namusonge (2017) findings that the mobile money is faster, cheaper, more reliable, and safer. The benefits of cashless transaction including less opportunity for fraudulent and criminal activities, and mobile money technology (MMT) have increased adoption rates among SMEs in the capital city.

**Table 4.25: Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	8.001	0.084		95.250	0.000
Pricing of mobile led financial services	-2.435	0.317	-2.192	-7.681	0.000
Service investment	0.336	0.132	0.313	2.545	0.021
Firm Size	0.610	0.218	0.599	2.798	0.005
Efficiency of mobile led financial services	1.576	0.275	1.205	5.731	0.000

#### 4.6 Summary of Hypothesis

The following Table 4.26 provides a summary of hypotheses of the study as per objectives.

**Table 4.26: Summary of Hypotheses**

Hypotheses	Accept/Fail to Accept
Pricing of mobile led financial services has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya	Fail to accept
Service investment has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya	Fail to accept
Firm size has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya	Fail to accept
Efficiency of mobile led financial services has no significant influence on financial inclusion in commercial banks and mobile service providers in Kenya	Fail to accept

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents summary of the discussion of the study results findings and conclusions. The implications from the findings and areas for further research are also presented.

#### **5.2 Summary of Key Findings**

The aim of this study was to establish the influence of mobile led financial services competitiveness on financial inclusion among commercial banks and mobile service providers in Kenya. The specific objectives were to determine the influence of pricing of financial services, service investment, firm size and efficiency of financial services on financial inclusion among commercial banks and mobile service providers in Kenya. A descriptive research design was used and the target population was 852 heads of departments and assistant heads of departments in the 42 Commercial Banks in Kenya and 6 mobile financial services providers. Stratified random sampling was used to select 384 respondents from the target population. Primary data was collected by use of structured questionnaires. Quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 24.0) and analyzed using descriptive statistics. Quantitative data was presented in tables, graphs and explanation were presented in prose. Inferential statistics, including Pearson correlation and regression analyses were also performed to test the hypotheses of the study.

### **5.2.1 Influence of Pricing of Mobile Led Financial Services on Financial Inclusion**

The results from the correlation analysis indicated that pricing of mobile led financial services is significantly related to financial Inclusion among commercial banks and mobile service providers in Kenya ( $r = 0.798$ ,  $p\text{-value}=0.000$ ). The regression results revealed that pricing of mobile led financial services has a significant inverse influence on financial inclusion among commercial banks and mobile service providers in Kenya ( $\beta=-0.263$ ,  $p\text{-value}=0.000$ ).

The study found that lack of ability to understand financial services offered and the associated prices has in some markets resulted in low levels of price sensitivity (4.54); the price of the firm's services has attracted more customers into their institution (4.39); the firm's pricing is done with the aim of maintaining the relationship they have with their customers (4.39); the optimal introductory price of a financial innovation can be affected by the degree of price sensitivity evident in the marketplace (4.38); the firm's competitors have not been able to imitate the financial innovation that they have adopted (4.37); the firm's pricing strategies for introducing financial innovations such as the mobile led financial services have taken into account the market forces that are at work (4.34); and that lower prices may lead to faster diffusion processes and therefore increase the market penetration of the innovator in advance of competitive entry to the market (4.34).

### **5.2.2 Influence of Service investment on Financial Inclusion**

The results from the correlation analysis indicated that service investment is significantly related to financial inclusion among commercial banks and mobile service providers in Kenya ( $r = 0.436$ ;  $p\text{-value}=0.002$ ). In addition, regression results indicated that service investment has a significant influence on financial inclusion among commercial banks and mobile service providers in Kenya ( $\beta=0.184$ ,  $p\text{-value}=0.000$ ).



It was found that a majority of respondents highly agrees that Mobile led financial services have improved customer retention and reduced cost per transaction (4.35); the institution is addressing shrinking profits by engaging customers in new ways to stay relevant, increase revenue and brand loyalty (4.34); the firm is adding value to customer depository services with the addition of mobile technology and realizing customer retention benefits as a result (4.20); the mobile channel can help the firm reduce transaction costs as well as increase customer engagement and retention (4.04); and that the firm has heavily invested in the adoption and sustenance of mobile led financial services (3.94).

### **5.2.3 Influence of Firm Size on Financial Inclusion**

The findings from correlation analysis revealed that service investment is significantly related to financial inclusion among commercial banks and mobile service providers in Kenya ( $r = 0.716$ ;  $p\text{-value}=0.001$ ). From the regression results, the study found that firm size has a significant effect on financial inclusion among commercial banks and mobile service providers in Kenya ( $\beta=0.215$ ,  $p\text{-value}=0.000$ ).

The study sought to examine the influence of firm size on financial inclusion among commercial banks and mobile service providers in Kenya. A majority of respondents highly agreed that in the presence of non-trivial fixed costs of raising external funds large firms have cheaper access to outside financing per dollar borrowed (4.55); profitable firms have higher access to finance given the assurance it gives to the lenders on financial sustainability (4.54); it may be relatively more costly for smaller firms to resolve information asymmetries with debt providers (4.53); transaction costs are typically a function of scale and may be higher for smaller firms (4.51); small borrowers borrow frequently and repay in small installments (4.40); small firms have fewer opportunities to raise capital because capital markets are out of reach due to their size (4.35); and that larger firms tend to be more diversified and fail less often so size can be an inverse proxy for the probability of bankruptcy (4.21).

#### **5.2.4 Influence of Efficiency of Mobile Led Financial Services on Financial Inclusion**

The findings from correlation analysis revealed that efficiency of mobile led financial services is significantly related to financial inclusion among commercial banks and mobile service providers in Kenya ( $r = 0.708$ ;  $p\text{-value}=0.002$ ). The regression findings revealed that efficiency of mobile money services has a significant effect on financial inclusion among commercial banks and mobile service providers in Kenya ( $\beta=0.211$ ,  $p\text{-value}=0.000$ ).

The study sought to assess the effect of efficiency of mobile led financial services on financial inclusion among commercial banks and mobile service providers in Kenya. A majority of respondents highly agrees that banks can realize operational efficiencies by adopting an integrated channel strategy that includes mobile banking (4.47); mobile phone technology has provided more frequent opportunities to open and access member accounts in real time during field officer visits (4.39); restructuring branches could provide banks an opportunity to improve efficiency (4.37); the lower costs and efficiencies associated with mobile transactions could change the economics of serving the underserved (4.34); mobile led financial services can lead to closure of poorly performing branches and increase operating efficiencies by shifting the focus of branch employees from transactions to more advisory-type services (4.32); the addition of mobile phone technology has improved the efficiency of financial transactions and reduced operational costs (4.29); and that using mobile technology has been contributing in improving efficiency of banks, and financial inclusion (4.20).

#### **5.3 Conclusions**

Based on the foregoing findings, the study hereby concludes that pricing of mobile led financial services has an inverse and significant influence on financial inclusion among commercial banks and mobile service providers in Kenya. The study found

that pricing of respective mobile led financial services is competitively done in relation to the various financial innovations. Pricing in this regard has particularly been done with consideration of the customer's price sensitivity, the competitors in the market and by taking into account the market forces that are at work.

The study also concludes that service investment has a positive and significant effect on financial inclusion among commercial banks and mobile service providers in Kenya. The study established that mobile led financial services have improved customer retention which is to a significantly large extent attributable to the reduced cost per transaction in mobile money innovations. Most of the companies have heavily invested in the adoption and sustenance of mobile led financial services by engaging customers in reduced transaction costs and adding value to customer depository services.

The study further concludes that firm size has a positive and significant influence on financial inclusion among commercial banks and mobile service providers in Kenya. As such, it can be deduced that transaction costs are typically a function of scale and may be higher for smaller firms. In addition, the larger the firm, the more the likelihood of diversification and hence the less the likelihood of failure and probability of bankruptcy therefore contributing more sustainably to the financial inclusion in the country with regard to mobile led financial services.

The study also concluded that efficiency of mobile led financial services has a positive and significant influence on financial inclusion among commercial banks and mobile service providers in Kenya. The addition of mobile phone technology has improved the efficiency of financial transactions and reduced operational costs; and that using mobile technology has been contributing in improving efficiency of banks, and financial inclusion. As such, banks can realize operational efficiencies by adopting an integrated channel strategy that includes mobile banking and that restructuring branches could provide banks an opportunity to improve efficiency. Mobile phone technology also has the potential to provide more frequent

opportunities to open and access member accounts for banks, in real time during field officer visits.

## **5.4 Recommendations**

### **5.4.1 Managerial Recommendations**

The study found that pricing of mobile led financial services has an inverse influence in the utilization of mobile banking services and financial inclusion. Therefore, both commercial banks and mobile service providers should come up with strategies of reducing the cost of service delivery and hence pricing. One way to enable lower fees should be by creating category of street-level sub-agents, characterized by lower costs and commissions than store-based agents. Sub-agents would use normal retail outlets to rebalance their cash and stored value. The key principle here is that segmentation of customers' needs to go hand-in-hand with segmentation of agents.

In both commercial banks and mobile service providers, service investment influences financial inclusion positively. Therefore, the study recommends that these institutions should continue investing in the establishment and maintenance of infrastructure supporting mobile led financial services. This will help in increasing efficiency in service delivery and hence customer satisfaction.

The study also found that there is a belief that mobile payments could cannibalize existing electronic payment services, providing limited return on investment. For instance, since the adoption of mobile banking in commercial banks, the use of automated teller machines has been decreasing. However, there are customers who still trust ATMs more than mobile led financial services and hence should be retained. In addition, commercial banks should incorporate mobile led financial services in all their automated teller machines.

The study found that firm size has a positive influence on financial inclusion among commercial banks and mobile service providers in Kenya. Due to economics of

scale, the larger the firm the better the services and lower the cost of service delivery. The study therefore recommends that financial institutions should seek to increase their capital base by use of debts and selling of shares. This will help in financing the support of infrastructure related to mobile-led financial services.

The study found that efficiency in mobile led financial services influences financial inclusion among commercial banks and mobile service providers in Kenya positively. Thus, the study recommends that commercial banks and mobile service providers should improve the efficiency of their mobile led financial services by reducing cycle time and response time as a way of increasing customer satisfaction and hence financial inclusion.

#### **5.4.2 Policy Recommendations**

There is a need by regulators to revise the current loose regulatory framework to formulate clear regulations to current and prospective mobile operators, for example on transaction volumes, business use of services, and security. Lack of clarity and uncertainty is not good for any business and nor for the confidence in the financial systems. By setting the rules clearly, the playing field is more predictable and this will promote further investments and competition.

With the inevitable cross boundaries between banks and mobile operator, more policies should be formulated to encourage financial sector deepening should be implemented. These should be complemented with measures to promote the growth and image of banks and mobile operators in a bid to promote the synergy existing between them. Pertaining to losses due to fraudulent access of customers' accounts through hacking, there is a need to employ disciplined, qualified and well remunerated ICT staff in the bank and at the level of mobile operator.

## **5.5 Areas for Further Research**

This study was limited to the headquarters of commercial banks and mobile service providers in Kenya, which are located in the urban areas. The study therefore recommends that similar studies should be conducted at branch level of commercial banks and mobile service providers in Kenya and in the rural areas. In addition, the study looked at mobile led financial services competitiveness and financial inclusion from the perspective of the institutions and not from the customers' perspective. The study therefore suggests that similar studies should be conducted to involve in customers.

Mobile led financial services are governed by several regulatory frameworks such as Central Bank of Kenya Act, Banking Act, Guideline on Agent Banking, The Kenya Information and Communications Act and The Kenyan Competition Act No. 12 of 2010. However, this study did not show how government policies relate with mobile led financial services competitiveness and financial inclusion. The study therefore recommends that further studies should be conducted on the moderating role of government policy on the relationship between mobile led financial services competitiveness and financial inclusion.

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## APPENDICES

### Appendix I: Introduction Letter



JOMO KENYATTA UNIVERSITY  
OF  
AGRICULTURE AND TECHNOLOGY

DEPARTMENT OF ENTREPRENEURSHIP, TECHNOLOGY, LEADERSHIP AND  
MANAGEMENT

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OFFICE OF THE CHAIRPERSON  
P. O. BOX 62000  
NAIROBI

JKU/3/114/22

DATE: 1<sup>st</sup> August, 2017

To whom it may concern:

RE: RESEARCH PROJECT FOR: VINCENT NYAGILO HD433-0874/2009

This is to introduce to you **Mr. Vincent Nyagilo** who is a student pursuing PhD. In Business Administration in the Department of Entrepreneurship, Technology, Leadership and Management, in the School of Entrepreneurship, Procurement and Management, at Jomo Kenyatta University of Agriculture and Technology.

The student is currently undertaking a PhD. research on: "**Competitiveness of Mobile Led Financial Services and its Effect on Financial Inclusion in Kenya.**" in partial fulfilment of the requirement for the programme.

The purpose of this letter is to request you to give the student the necessary support and assistance to enable him to obtain the necessary data for the research. Please note that the information given is purely for academic purposes and will be treated with strict confidence.



Thank you

Yours Sincerely,

**Dr. Alice Simiyu**

**Research Project Coordinator, ETLM Department**

JKUAT is ISO 9001:2008 & ISO 14001:2004 Certified

Setting Trends in Higher Education, Research and Innovation

## Appendix II: Questionnaire

Name \_\_\_\_\_

(Optional)

### PART B: Pricing of Financial Services

Kindly indicate your level of agreement to the statements relating to pricing of mobile-led financial services and its influence on financial inclusion in commercial banks and mobile service providers in Kenya. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

Statements on pricing of financial services	1	2	3	4	5
1. Our pricing is done with the aim of maintaining the relationship we have with our customers					
2. Our pricing strategies for introducing financial innovations such as the mobile led financial services have taken into account the market forces that are at work					
3. The price of our services has attracted more customers into our institution.					
4. Our competitors have not been able to imitate the financial innovation that we have adopted					
5. Lower prices may lead to faster diffusion processes and therefore increase the market penetration of the innovator in advance of competitive entry to the market					
6. The optimal introductory price of a financial innovation can be affected by the degree of price sensitivity evident in the marketplace					

7. The lack of ability to understand financial services offered and the associated prices has in some markets resulted in low levels of price sensitivity					
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**Part C: Service investment**

Kindly indicate your level of agreement to the statements below relating to service investment of mobile-led financial services and its influence on financial inclusion in commercial banks and mobile service providers in Kenya. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

<b>Statements on service investment</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
8. We have heavily invested in the adoption and sustenance of mobile led financial services					
9. The organization has approached the mobile financial services with caution due to concerns about limited opportunities for revenue					
10. There is a belief that mobile payments could cannibalize existing electronic payment services, providing limited return on investment.					
11. The mobile channel can help us reduce transaction costs as well as increase customer engagement and retention					
12. We are adding value to customer depository services with the addition of mobile technology and realizing customer retention benefits as a result					
13. The institution is addressing shrinking profits by engaging customers in new ways to stay relevant, increase revenue and brand loyalty					
14. Mobile led financial services have improved					

customer retention and reduced cost per transaction					
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**Part D: Size of the Firm**

Kindly indicate your level of agreement to the statements below relating to firm size in mobile-led financial services and its influence on financial inclusion in commercial banks and mobile service providers in Kenya. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

<b>Statements of size of the firm</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
15. Larger firms tend to be more diversified and fail less often so size can be an inverse proxy for the probability of bankruptcy					
16. It may be relatively costlier for smaller firms to resolve information asymmetries with debt providers					
17. Transaction costs are typically a function of scale and may be higher for smaller firms.					
18. Small firms have fewer opportunities to raise capital because capital markets are out of reach due to their size.					
19. In the presence of non-trivial fixed costs of raising external funds large firms have cheaper access to outside financing per dollar borrowed.					
20. Profitable firms have higher access to finance given the assurance it gives to the lenders on financial sustainability					
21. Small borrowers borrow frequently and repay in small installments					

**Part E: Efficiency**

Kindly indicate your level of agreement to the statements below relating to efficiency of mobile-led financial services and its influence on financial inclusion in commercial banks and mobile service providers in Kenya. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

<b>Statements on efficiency of mobile led financial services</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
22. Banks can realize operational efficiencies by adopting an integrated channel strategy that includes mobile banking					
23. Mobile led financial services can lead to closure of poorly performing branches and increase operating efficiencies by shifting the focus of branch employees from transactions to more advisory-type services					
24. The addition of mobile phone technology has improved the efficiency of financial transactions and reduced operational costs.					
25. Mobile phone technology has provided more frequent opportunities to open and access member accounts in real time during field officer visits.					
26. The lower costs and efficiencies associated with mobile transactions could change the economics of serving the underserved					
27. Restructuring branches could provide banks an opportunity to improve efficiency					
28. Using mobile technology has been contributing in improving efficiency of banks, and financial					

inclusion.					
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**Part F: Financial Inclusion**

Kindly indicate your level of agreement to the statements below relating to financial inclusion attributed to the competitiveness of mobile led financial services in commercial banks and mobile service providers in Kenya. Use a scale of 1-5, where 1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly agree.

<b>Statement on financial inclusion</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
29. Through competitiveness of mobile led financial services people in rural areas can now access mobile banking services					
30. Competitiveness of mobile led financial services has led to increase saving habits					
31. Competitiveness of mobile led financial services has led to enhanced asset ownership					
32. Competitiveness of mobile led financial services has led to improved purchasing power					
33. Competitiveness of mobile led financial services has led to declined income inequality					
34. Mobile banking has the ability to reach the ‘unbanked’ sectors of the economy					
35. Most people have taken up M-banking because it is cheaper than traditional banking systems					
36. Most people have taken up M-banking because of the zero-deposit required to maintain a non-bank led m-banking account which only charges transaction fees					

37. Most people have taken up M-banking because the transaction cost is considered lower than any other alternative					
38. The clearest direct benefits of mobile money are greater convenience, faster speed and lower cost of transferring funds					

**Thank you for your participation in this research.**

**Your effort is greatly appreciated.**

### Appendix III: List of Commercial Banks in Kenya

Classification	Description	Commercial Banks
Tier I	Comprises of banks with a balance sheet of more than Kenya Shillings 40 billion	<ol style="list-style-type: none"> <li>1. Citibank</li> <li>2. Equity Bank</li> <li>3. Standard Chartered Bank</li> <li>4. Barclays Bank of Kenya</li> <li>5. NIC Bank</li> <li>6. Kenya Commercial Bank</li> <li>7. National Bank of Kenya</li> <li>8. Diamond Trust Bank</li> <li>9. Co-operative Bank of Kenya</li> <li>10. CFC Stanbic Bank</li> </ol>
Tier II	Comprises of banks with a balance sheet of less than Kenya Shillings 40 billion but more than Kenya Shillings 10 billion	<ol style="list-style-type: none"> <li>11. I&amp;M Bank</li> <li>12. Bank of India</li> <li>13. Bank of Baroda</li> <li>14. Family Bank</li> <li>15. Prime Bank</li> <li>16. Commercial Bank of Africa</li> <li>17. Bank of Africa</li> <li>18. Consolidated Bank</li> <li>19. Chase Bank</li> <li>20. Fina Bank</li> <li>21. EcoBank</li> <li>22. HFCK</li> </ol>
Tier III	Comprises of banks	<ol style="list-style-type: none"> <li>23. Habib A.G. Zurich</li> <li>24. Victoria Commercial Bank</li> </ol>



- with a balance sheet of less than Kenya Shillings 10 billion
25. Credit Bank
  26. Habib Bank (K) Ltd
  27. Oriental Commercial Bank
  28. K-Rep Bank/Sidian Bank Limited
  29. ABC Bank
  30. Development Bank of Kenya
  31. Middle East Bank
  32. Equatorial Commercial Bank/Spire Bank Ltd
  33. Trans-National Bank
  34. Dubai Bank
  35. Fidelity Commercial Bank
  36. City Finance Bank
  37. Paramount Universal Bank
  38. Giro Commercial Bank
  39. Guardian Bank
  40. Southern Credit Bank
  41. Gulf African Bank
  42. First Community Bank

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**Source: The Banking Survey 2014, pp. 191**

#### **Appendix IV: List of Mobile Financial Service Providers**

<b>Organization</b>	<b>Mobile Money service</b>
Safaricom Limited	Mpesa
Airtel Kenya Limited	Airtel Money
Yu	yuCash
Telkom	Orange Money
Mobikash Ltd	MobiKash
Mobile Pay Limited	Tangaza Pesa