THE RELATIONSHIP BETWEEN MOBILE MONEY TRANSFERS AND ECONOMIC GROWTH IN KENYA

BY:

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DECLARATION

This Research project is my original work and has not been submitted for examination in any other University.

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Adano Duba Habane D63/63277/2011

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

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I dedicate this research project to my parents – for your steadfast love and care throughout my pedagogical endeavours.
ACKNOWLEDGEMENT

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To all, I remain forever grateful
ABSTRACT

The mobile money transfer (MMT) service is an aspect of a broader concept emerging in the electronic payment and banking industry referred to as Mobile Money. Economic growth can be measured in nominal terms. Economic growth measures growth in monetary terms and looks at no other aspects of development. This study sought to establish the relationship between mobile money transfers and economic growth in Kenya.

The study applied descriptive research design. The target population included six mobile phone service providers who provide mobile money transfer services. The total amounts transferred via the mobile for the past five years was collected and then correlated with the economic growth proxy Gross Domestic Product measured by change in GDP. The study used secondary data from the Central bank of Kenya, Mobile phone Companies and Kenya National Bureau of Statistics. The researcher conducted a correlation analysis in order to establish the relationship between mobile money transfer and economic growth.

During the study period, the amount of money transacted through the mobile money transfers increased steadily from 0.06 billion in 2007 on its launch to 118.08 billion by the last month of the analysis. The growth was motivated by the convenience offered by the service as the service does not require an individual to have a bank account in order to transact. Customers also transacted business on mobile money transfer platform from anywhere thus offering convenience. The correlation analysis conducted established that there was a weak positive insignificant correlation between economic growth and mobile money transfer in Kenya as explained by the Pearson correlation coefficient of +0.027 which was very low with the significance two tailed test figure being 0.966 which was greater than 0.05.

The study recommends that the policy makers take mobile money transfer into consideration when drafting policies. This was because of the indirect relationship of mobile money transfer to economic growth through the provision of job opportunities, increased financial deepening and financial inclusion.
# TABLE OF CONTENTS

DECLARATION....................................................................................................................... ii  
DEDICATION.......................................................................................................................... iii  
ACKNOWLEDGEMENT...................................................................................................... iv  
ABSTRACT............................................................................................................................... v  
ABBREVIATIONS AND ACRONYMS........................................................................... viii  

CHAPTER ONE ....................................................................................................................... 1  
INTRODUCTION..................................................................................................................... 1  
1.1 Background of the Study ................................................................................................. 1  
1.1.1 Mobile Money Transfer........................................................................................... 2  
1.1.2 Economic Growth ..................................................................................................... 2  
1.1.3 The Relationship between Mobile Money Transfer and Economic Growth .... 4  
1.1.4 Mobile Phones and Economic Development......................................................... 6  
1.1.5 Mobile Phone Money Transfers in Kenya ............................................................. 7  
1.2 Research Problem ............................................................................................................ 8  
1.3 Research Objective ......................................................................................................... 10  
1.4 Value of the Study .......................................................................................................... 10  

CHAPTER TWO .................................................................................................................... 11  
LITERATURE REVIEW...................................................................................................... 11  
2.1 Introduction...................................................................................................................... 11  
2.2 Theoretical Review ........................................................................................................ 11  
2.3 Measures of Economic Growth.................................................................................... 13  
2.4 Mobile Money Transfer................................................................................................. 14  
2.5 Empirical Review............................................................................................................ 16  
2.6 Conclusion...................................................................................................................... 20  

CHAPTER THREE ................................................................................................................ 22  
RESEARCH METHODOLOGY........................................................................................ 22  
3.1 Introduction.................................................................................................................... 22  
3.2 Research Design............................................................................................................. 22  
3.3 Population of the Study ............................................................................................... 22  
3.4 Data Collection ............................................................................................................. 23  
3.4 Data Analysis.................................................................................................................. 23
CHAPTER FOUR: .................................................................25
DATA ANALYSIS, FINDINGS AND DISCUSSION ....................25
  4.1 Introduction .....................................................................25
  4.2 Mobile Money Transfers ..................................................25
  4.4 Correlation Analysis .......................................................29
  4.5 Interpretation of the Findings .........................................30

CHAPTER FIVE: .................................................................33
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS ........33
  5.1 Introduction .....................................................................33
  5.2 Summary .........................................................................33
  5.4 Policy Recommendations ................................................35
  5.5 Limitations of the Study ....................................................36
  5.6 Suggestions for Further Studies .......................................36

REFERENCES .........................................................................38
APPENDICES ........................................................................43
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANOVA</td>
<td>Analysis of Variance</td>
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<tr>
<td>BOP</td>
<td>Bottom of the Pyramid</td>
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<td>CBK</td>
<td>Central Bank of Kenya</td>
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<td>CCK</td>
<td>Communication Commission of Kenya</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GNP</td>
<td>Gross National Product</td>
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<td>GVA</td>
<td>Gross Value Added</td>
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<td>ICTs</td>
<td>Information and communication technologies</td>
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<td>IFC</td>
<td>International Finance Corporation</td>
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<td>IFPRI</td>
<td>International Food Policy Research Institute</td>
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<td>ITU</td>
<td>International Telecommunication Union</td>
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<td>KNBS</td>
<td>Kenya National Bureau of Statistics</td>
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<td>MFI</td>
<td>Microfinance Institution</td>
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<td>MMT</td>
<td>Mobile Money Transfer</td>
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<td>OECD</td>
<td>Organization of Economic Corporation and Development</td>
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<td>P2P</td>
<td>Person-to-person</td>
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<td>SMEs</td>
<td>Small Medium Enterprises</td>
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<td>SMS</td>
<td>Short Message Service</td>
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<td>SUERF</td>
<td>Société Universitaire Européenne de Recherches Financières</td>
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<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
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<td>USA</td>
<td>United States of America</td>
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CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Information and communication technologies (ICTs) have reduced the globe in digital networks, and none is as widespread as the mobile phone, a technology with more than five billion subscriptions globally (Wireless Intelligence). The convergence of telecommunication and banking services has created opportunities for the emergence of mobile commerce, in particular mobile banking and money transfers which have immense contributions to economic development (Vaughn, 2007). The combination of widespread cellular communication and the ability to transfer money instantly, securely, and inexpensively are together leading to enormous changes in the organization of economic activity, family relations, and risk management and mitigation, among other things.

A decade ago, family members in different parts of Kenya had a very limited scope of communicating with relatives in distant parts of the country, and they faced even greater difficulties in sending or receiving remittances. Now, in many cases, appeals for assistance and the availability of resources can be communicated, and money can be transferred almost instantaneously. Among the changes observers have noted are changes in the nature, pattern and impact of remittances. Pickens (2009) observes that users often keep a balance on their M-Pesa accounts, thereby using the system as a rudimentary bank account despite the fact that the system does not provide interest. In
addition, Vaughn (2007) notes that some individuals stored money in M-Pesa due to safety considerations, especially when travelling across the country.

1.1.1 Mobile Money Transfer

The mobile money transfer (MMT) service is an aspect of a broader concept emerging in the electronic payment and banking industry referred to as Mobile Money. Even though mobile money has not been well defined in literature it can be said to include all the various initiatives (long-distance remittance, micro-payments, and informal air-time battering schemes) aimed at bringing financial services to the unbanked using mobile technology. However, Jenkins (2008) defined Mobile Money as money that can be accessed and used via mobile phone. With an increasingly, widespread use of mobile phones by consumers in the emerging markets, mobile money transfer is not just a fad but a great phenomenon. The introduction of prepaid cards and the fallen prices of mobile handsets have lead to a rapid spread of mobile phones in the emerging economies (Orozco, Jacob and Tescher, 2007). This has opened up diverse opportunities for it to be used over and above voice communication.

1.1.2 Economic Growth

Economic growth is defined as 'a rise in the total output (goods or services) produced by a country'. It is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. Economic growth occurs whenever people take resources and rearrange them in ways that are more valuable. Economic growth refers only to the quantity of goods and services produced; it says
nothing about the way in which they are produced. Economic growth can be measured in
nominal terms, which include inflation, or in real terms, which are adjusted for inflation
i.e. by the percent rate of increase in the gross domestic product (GDP). Economic
growth measures growth in monetary terms and looks at no other aspects of development
(Ayres and Warr, 2006).

Economic growth can be either positive or negative. Negative growth can be referred to
by saying that the economy is shrinking. Negative growth is associated with economic
recession and economic depression. Gross national product (GNP) is sometimes used as
an alternative measure to gross domestic product. In order to compare multiple countries,
the statistics may be quoted in a single currency, based on either prevailing exchange
rates or purchasing power parity. Then, in order to compare countries of different
population sizes, the per capita figure is quoted. To compensate for changes in the value
of money (inflation or deflation) the GDP or GNP is usually given in "real" or inflation
adjusted, terms rather than the actual money figure compiled in a given year, which is
called the nominal or current figure (Ayres and Warr, 2006). King and Levine (1993) and
Beck and Web (2003) suggest that financial systems are important for productivity,
growth and development. Well functioning institutions and markets notably augment
technological innovation, capital accumulation and therefore economic growth. They also
noted that well-functioning financial markets lower the costs of transaction increasing the
amount of savings put into investment. They also allows for capital to be allocated to
projects that yield the highest returns and therefore enhance economic growth rates.
1.1.3 The Relationship between Mobile Money Transfer and Economic Growth

Several studies have established the relationship between telecommunication and economic growth. Wilkison and Sundelelowotz (2007), for example, argue that there are direct and indirect links between the exponential growth of mobile telephony and the rate of economic growth in Africa. Such a link is also highlighted by the International Food Policy Research Institute (IFPRI) which estimates that for 113 countries over a 20-year period show a positive link between telecommunications and gross domestic product (GDP). The estimates suggest that a 1% increase in the telecommunications penetration rate leads to a 0.03 percent increase in GDP' (IFPRI, 2006).

Strengthening such views, Madden, Savage, Coble-Neal and Bloxham (2000) argue that telecommunications technology can improve living standard in a poor community by providing important commercial, social and educational opportunities. This argument is supported by the work of Scott, Batchelor, Ridley, and Jorgensen (2004) and Tanburm and Singh (2001) who add that innovative applications of mobile phones have increased the efficiency of service delivery to the poor or opened opportunities for new services. A research by Waverman, Meschi and Fuss (2005) found that an increase of 10 more mobile phones in developing countries between 1996 and 2003 resulted into per capita GDP growth of 0.59% higher than otherwise. Eagle (2005) attributes this growth to the entrepreneurial use of mobile phones through enabling relatively cheaper transactions, accessing information and service provision. Klonner and Nolen (2008) found that the use of mobile phones leads to increase in employment by 1.4% and income by 5.4% higher than otherwise. The World Bank (2002) noted that there has been an increase in
individuals in developing countries providing public pay phone services which have proven to have a good demand.

In Kenya, the fast growing mobile phones industry has brought a wide range of opportunities and threats. At the top of the pyramid, the mobile phone network providers and hardware supplies have been making huge profits over the last 10 years. At the bottom of the pyramid, the industry has provided a variety of opportunities for entrepreneurship and. Mobile banking services provide time independence, convenience and promptness to customers, along with cost savings. Mobile banking presents an opportunity for banks to expand market penetration through mobile services (Lee, K.S., Lee, H.S and Kim. 2007).

The mobile phone has become "the single most transformative tool for development." Seventy five percent of the 4 billion mobile phones currently in use worldwide are in developing countries, and within the next decade there will be more mobile phone subscriptions in the world than people. A recent econometric study by the World Bank shows that, on average, an additional ten phones per one hundred people in a developing country boosts GDP growth by 0.8 percent (Klonner and Nolen, 2008).

Though mobile phones make communication easier, resulting in economic growth, they can also be useful for things other than simple communication. One such innovation is mobile money: using mobile phones to electronically store currency and pay for goods and services via short message service (SMS) (Waverman, Meschi and Fuss, 2005). Consumers, vendors, and financial institutions can transfer mobile money, denominated in either local currency or mobile minutes, easily and with low transaction costs. Because
mobile money is a cheaper, safer, and more convenient way to transfer funds, and reduces the costs associated with saving and lending, consumers in developing countries are recognizing its benefits. Like the microfinance institution (MFI) model pioneered by Grameen Bank in the 1970s, mobile money has increased access to financial services. Working together, mobile money and MFIs can expand access to financial services in developing countries (Mas and Morawczynski, 2009).

This study will explore mobile banking, specifically as it relates to poverty reduction strategies in developing countries, by discussing a brief history of the rise of mobile phones, how mobile money works, use of mobile money as a poverty reduction strategy, the various uses of mobile money, and overcoming challenges for mobile money. Based on the potential benefits of mobile money, we recommend that governments subsidize the formation of local mobile money infrastructure and adopt policies that encourage the formation of mobile money networks and the use of these networks by MFIs.

1.1.4 Mobile Phones and Economic Development

The Kenya government recognizes the role-played by the mobile phones, and associated technologies in the economic growth and development (sessional paper, 2005). Therefore together with other stakeholders and development partners, Kenyan government has encouraged the development of communication infrastructure such as Communication Commission of Kenya (CCK), which is regulating the mobile service providers, fixed line service providers, and other stakeholders in provision of the service industry (Research ICT Africa, 2004). At the same time the government has recognized with
concern the growth of micro-enterprises as the foundation blocks of development and industrialization.

The Ministry of Labor and Human Resources Development has set up a department to deal with the development of the micro and small enterprises. Through this Ministry the government has identified that inappropriate technology as a major constraint in the country achieving the economic benefits resulting from the SMEs (Sessional paper 2005). The government through Ministry of Information and Communication has encouraged the Kenyan population to join the information superhighways, to make them competitive and have a global reach, penetrate more markets, access information from different sources (customers, suppliers, banks), which are some of the factors hindering the productivity, and profitability of the SMEs, their growth and expansion (Pickens, Porteous and Rotman, 2009).

1.1.5 Mobile Phone Money Transfers in Kenya

As in many other developing countries, inexpensive handsets have made it possible for more and more people in Kenya to get a phone connection. This is a trend that is still valid; the number of mobile phone connections has risen from 4.5 million in 2005 to more than 17 million in 2009 (KNBS, 2010). Currently, there are four providers of mobile telephony; Safaricom, Airtel, Orange and Yu with corresponding mobile banking service, namely; M-pesa, Airtel Money, Orange Money and yuCash. M-pesa is the predominant service for sending money and had more than 12.6 million registered users by August 2010. The service has experienced staggering growth during 2010; on average half a million new users have been registered every month (Eriksson, 2010).
According to Heyer and Mas (2010) "mobile money" includes three elements: an electronic stored value account linked to a user's mobile phone; mobile phone software (or "application") that allows users to manage their accounts, and a network of agents where users can exchange between cash and electronic value. The software can afford a variety of uses, such as the ability to check a bank account balance via text message, the means to pay with or send money from a digital account on a mobile phone, or the practice of receiving insurance or credit products over the mobile network. Assessing the diversity, Gencer (2011a) separates mobile money into mobile payments, mobile finance, and mobile banking. Safaricom's service is capable of each of these functions.

1.2 Research Problem

Improving access to financial services, such as savings, deposits, insurance and remittances is vital to reducing poverty and promoting economic growth of a nation. In many developing countries, however, 9 out of 10 people do not have a bank account or access to basic financial services. Poor people are often not considered viable customers by the formal financial sector as their transaction sizes are small, and many live in remote areas beyond the reach of banks' branch networks. Informal banking services such as microfinance, village savings and loan associations remain limited in their reach. All these efforts have been done to promote economic growth of the nation. Offering banking products through mobile phones is one option that offers great potential for reaching poor people.

The advent of the mobile money transfer services has revolutionized the way the financial services industry conducts business, empowering organizations with new
business models and new ways to offer 24 hour accessibility to their customers. The ability to offer financial transactions over the mobile phone has also created new players in the financial services industry, such as mobile phone service providers who offer personalized services. This is evident with the prevalent use of M-pesa, Airtel Money, Orange Money and yuCash. The real time money transfer over the mobile phones enables individuals in areas with no demand to acquire demand within seconds.

Several studies have been done on mobile phone banking and economic growth concepts. Kigen (2011) studied the impact of mobile banking on transaction costs of microfinance institutions using a survey of microfinance institutions in Nairobi. In his findings, mobile banking drastically reduced the transaction costs of microfinance institutions (MFI) thereby increasing the penetration level of the MFIs. Otieno (2008) studied challenges in the implementation of mobile banking information systems in commercial banks in Kenya and established that the key challenges included high levels of online insecurities, fraud and low acceptance by the market. Wambari (2009) studied mobile banking in developing countries using a case study on Kenya where he established that m-banking has a positive impact on transfers, payments, deposits and withdrawals in financial transactions of small businesses.

From the above discussions, many studies had been undertaken in mobile banking. However, no known studies had been done to ascertain the relationship between mobile money transfer and economic growth in Kenya. This study therefore, aimed to filling the identified gap in knowledge concerning the relationship between mobile money transfers
and economic growth in Kenya. Hence, the study sought to answer one research question: what is the relationship between mobile money transfers and economic growth in Kenya?

1.3 Research Objective
To establish the relationship between mobile money transfers and economic growth in Kenya

1.4 Value of the Study
This study would be of value to different stakeholders:

The general public would be informed about the benefits of mobile money transfer on economic growth. This follows the maxim that 'information is power' and hence empowers the users as well as providers of the service gearing towards improved services.

For the policy makers and agencies like the Central bank of Kenya (CBK), the findings of this study would be important in informing the policy formulation especially with regard to regulating the mobile money transfer services. The research findings add dimension that may help improve policy direction with regard to regulation of MMT as well as factors that spur economic growth.

As for scholars and academicians, this study would be important in providing information on mobile money transfer and economic growth. Nevertheless, the research also suggests areas of further studies where future scholars and researchers can seek more knowledge or better still corroborate emerging theories.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on mobile money transfer and economic growth. From this review, broad categories will be derived which will help to identify the critical relationship between mobile money transfers and economic growth. Specifically, the chapter addresses the theoretical framework guiding the study, measurement of economic growth, empirical literature and chapter summary.

2.2 Theoretical Review

2.2.1 Financial Intermediation Theory

Financial intermediation is a process which involves surplus units depositing funds with financial institutions who then lend to deficit units. Bisignano (1998) and Leland and Pyle (1977) identify that financial intermediaries can be distinguished by four criteria. First, their main categories of liabilities (deposits) are specified for a fixed sum which is not related to the performance of a portfolio. Second, the deposits are typically short-term and of a much shorter term than their assets. Third, a high proportion of their liabilities are chequeable (can be withdrawn on demand) and fourthly, their liabilities and assets are largely not transferable. The most important contribution of intermediaries is a steady flow of funds from surplus to deficit units.

According to Scholtens and van Wensveen (2003), the role of the financial intermediary is essentially seen as that of creating specialized financial commodities. These are created
whenever an intermediary finds that it can sell them for prices which are expected to cover all costs of their production, both direct costs and opportunity costs. Financial intermediaries exist due to market imperfections. As such, in a 'perfect' market situation, with no transaction or information costs, financial intermediaries would not exist. Numerous markets are characterized by informational differences between buyers and sellers. In financial markets, information asymmetries are particularly pronounced. Borrowers typically know their collateral, industriousness, and moral integrity better than do lenders. On the other hand, entrepreneurs possess inside information about their own projects for which they seek financing (Leland and Pyle, 1977). Moral hazard hampers the transfer of information between market participants, which is an important factor for projects of good quality to be financed.

2.2.2 Modern Economics Theory

Modern economics has gone far in discovering the various pathways through which millions of expectations of, and decisions by, individuals can give rise to emergent features of communities and societies (e.g., rate of inflation, productivity gains, level of national income, prices, and stocks of various types of capital, cultural values, and social norms). Two factors make economic theory particularly difficult (Hannagan, 1998). First, individual decisions at any moment are themselves influenced by these emergent features, by past decisions (e.g., learning, practice, and habit), and by future expectations. Second, the emergent features that can be well handled by existing economic theory and policy concern only fast-moving variables. The more slowly emergent properties that
affect attitudes, culture, and institutional arrangements are recognized, but are poorly incorporated.

According to William (1991), economists know that success in achieving financial return from fast dynamics leads to slowly emergent, nearly hidden, changes in deeper and slower structures, changes that can ultimately trigger sudden crisis and surprise. But the complexities that arise are such that most modern economists are frustrated in their attempts to understand the interactions between fast- and slow-moving emergent features.

2.3 Measures of Economic Growth

Just like a firm keeps record of the progress it makes over the years, an economy maintains its record of performance by the national income accounting. It is important for an economist to know how the economy is doing, because several policy steps depend upon the economic performance. Measuring economic growth involves quantifying the increase in welfare and to endowing with numerical precision the large-scale economic and social changes taking place in an economy. Economic growth is the sustained increase in welfare of an economy together with the ongoing changes in that economy's industrial structure; public health, literacy, and demography; and distribution of income. In the long run, as this economic transformation evolves so do social, political, and cultural norms. Societies change profoundly and multidimensional, as economic performance improves.

There are several measures instituted and used to measure economic growth including: National income levels, physical capital allocation, Gross Domestic Products (GDP) of the nation among others. Gross Domestic Product is designed to measure the value of
production of those activities that fall within the boundary of the national accounts system. GDP estimates are subject to uncertainties and to difficult measurement problems in some areas such as those in measuring production by the government sector (OECD, 2006). Over and above these technical problems, however, is the question as to whether, of all the data that can be extracted from the System of National Accounts, GDP is best suited to the task of measuring the total value of the economic resources that affect well-being. This section examines alternative national-accounts-based measures of economic resources, notably national income and household consumption, and assesses if they paint a different picture of the evolution and cross-country comparison than that based on GDP.

Another measure of economic growth as the Gross Value Added (GVA) per head which is typically used for considering performance levels within a country. Although there are some criticisms of this metric it has the advantage that it provides a full picture of performance implicitly including both productivity and employment effects.

2.4 Mobile Money Transfer

Person-to-person (P2P) payments are evolving to the next generation of electronic payments, the mobile channel. Advances in technology have enabled alternative functionalities for mobile handsets beyond the original visions of the designers of handsets or wireless communication architectures to supporting a new and viable channel for mobile financial services, including bill payment and account transfers, domestic and international P2P transfers, proximity payments at the point of sale, and remote payments to purchase goods and services (Merritt, 2010).
Mobile-enabled person-to-person payments, or mobile money transfer services (MMT), are experiencing rapid adoption in many markets, in response to steady growth in remittances, the worldwide ubiquity of cell phones, and the need for an electronic P2P payment alternative to paper-based mechanisms like cash and checks. More than a billion people worldwide lack access to traditional financial services, particularly in emerging countries, although they have mobile phones (Pickens, 2009). As of 2009, 68 percent of the world’s population had mobile cellular subscriptions (ITU, 2009).

The approach to adopting mobile financial services differs throughout the world due to a variety of factors, including the regulatory and legal environments, access to supporting technologies, and economic constraints, as well as experience with antecedent products and services. Consumer need and experience represent key components of each of these variables and are the ultimate determinants of adoption. The vast diffusion of cellular networks allows telecom firms to extend services to broad geographic areas unreachable by traditional financial service providers dependent upon landline networks (Chatain, Hernandez-Coss, Borowik and Zerzan, 2008). In many emerging markets the rapid adoption of mobile payments has led to the unanticipated utility of prepaid airtime as an alternative currency.

Expanded airtime distribution channels can accommodate a large customer market increasingly agnostic of geographic borders. Bilateral and multilateral partnerships between carriers expand the wireless network reach to facilitate the distribution of mobile payments services to a greater number of available users.
2.5 Empirical Review

Several scholars and researchers have studied the concept of mobile money transfers and economic growth. Mobile phone impact studies view economic development from either a macro-economic or a micro-economic standpoint. A precursor to the macro-economic studies is Hardy (1980), who found a positive impact of fixed line telephones on economic growth. Waverman et al. (2005) also find a positive significant effect of mobile telecommunications on economic growth and emphasize that this impact "may be twice as large in developing countries compared to developed countries." In addition, Waverman et al. (2005) report absolute price and income elasticities of mobile phone demand larger than 1. Likewise, Kathuria et al. (2009) showed that Indian states with higher mobile phone penetration have a higher economic growth.

Morawczynski, (2009) examined the adoption, usage and outcomes of mobile money services using the case of M-PESA in Kenya. From his findings, he noted that since being launched in 2007, the service has seen phenomenal growth in Kenya. Over 7.5 million users, or 34% of the adult population, have registered with M-PESA. The analysis was presented from two perspectives. First, the socio-technical systems framework was used to present M-PESA as a complex system rather than an isolated application. This perspective made it clear that M-PESA grew rapidly because it had a dedicated team of system builders. These individuals took numerous strategies to enroll the elements and maintain the stability of the entire system. They further worked to engineer the social, economic, legal and political environments of the technology. The analysis showed that a whole industry for mobile money developed as a result of M-PESA’s success.
Masinge (2010) studied the factors influencing the adoption of mobile banking services at the bottom of the Pyramid in South Africa. Masinge finds that with the convergence of banking services and mobile technologies, users are able to conduct banking services at any place and at any time through mobile banking. This Study examined the factors influencing the adoption of mobile banking by the Bottom of the Pyramid (BOP) in South Africa, with a special focus on trust, perceived cost and perceived risk including the facets of perceived risks: performance risk, security/privacy risk, time risk, social risk and financial risk. The research model includes the original variables of extended technology acceptance model (TAM).

Erickson (2010) did study mobile money: cell phone banking in developing countries. He established that transfer either local currency or mobile minutes. Mobile money can increase access to financial services. Microfinance institutions in particular can benefit from the use of mobile money. Unfortunately, regulatory and initial investment barriers can prevent widespread adoption of mobile money. He demonstrates that mobile money can serve as a poverty reduction tool by increasing savings rates, creating jobs, and increasing access to financial products offered by microfinance institutions. Based on the potential benefits of mobile money, he recommended that governments subsidize the development of local mobile money infrastructure and adopt policies that enable the formation of a decentralized network of trusted mobile money agents.

Blauw and Franses (2011) studied the impact of mobile telephone use on economic development of households in Uganda. They examined the impact of mobile telephone use on economic development of individual households. Unique cross-sectional data
were collected in personal interviews with heads of households (N=196) in Uganda. Economic development was measured at the household level by the Progress out of Poverty Index. They found strong support that mobile phone use positively impacts economic development.

Jensen (2007) and Aker (2010) find that the introduction of mobile phones reduced price dispersion in fish markets in India and grain markets in Niger respectively. In these instances the mobile phone technology has increased information flows, which has resulted in price reductions. In contrast, the development and introduction of M-pesa in Kenya can be viewed as a "disruptive technology" (Bower and Christensen, 1995) or an example of "creative destruction" (Aghion and Howitt, 1992), where M-Pesa revolutionized the money transfer industry. M-Pesa became the dominant money transfer mechanism within 2 years of its inception.

Ethnographic work by Morawczynski (2009) suggests that M-Pesa's popularity has been driven by its speed, safety, reliability, extensive network of outlets, and its price relative to the alternatives. Prior to the introduction of M-Pesa, Kabbucho et al (2003) document that the cost of instantly sending US$100 through normal channels ranged between US$12 (Money Gram) and US$20 (bank wire transfer), while the cost slower formal channels ranged from $3 (bus companies) to $6 (postal money order). Compared to these alternatives M-Pesa offered a significantly cheaper method of instantly transferring funds, where the cost of sending US$100 to a non-registered user by M-pesa was approximately US$2.50 in early 2008, while the cost of sending to a registered user was even less (Safaricom, 2008).
The dominance of M-pesa can also be observed in the financial statements of the competitors. Gikunju (2009) examines the financial statements of the Postal Corporation of Kenya and finds that revenues and profits for its PostaPay money transfer service declined rapidly after the introduction of M-Pesa and suggests that Western Union’s and MoneyGram’s profits have also declined over the same period. Faced with obsolescence, money transfer companies such as Western Union and MoneyGram have responded by cutting prices, even though they are still unable to match M-pesa’s superior convenience (Gikunju, 2009).

Morawczynski and Pickens (2009) and Mas and Morawczynski (2009) explored the economic and social impacts of M-Pesa in Kenya. Morawczynski and Pickens (2009) find ethnographic evidence that M-Pesa has changed the savings behavior, the pattern of remittances, and has increased rural livelihoods. While these studies provide suggestive evidence of the impacts of M-Pesa, they are generally unable to quantify the effects of the system and are limited by their small sample sizes.

Jack and Suri’s (2010) empirical study shows that M-Pesa improves the ability of households to smooth risks. They contribute to the literature by providing quantitative estimates of the impact of M-Pesa in Kenya on a variety of economic and social outcomes including financial access and usage. They combined the 2006 and 2009 Finaccess surveys and create a balanced panel of the 190 sub-locations that were surveyed in both rounds in order to examine the economic impact of M-Pesa on various outcomes pertaining to remittances, financial access, and economic livelihood.
2.6 Conclusion

This chapter reviewed the literature on mobile money transfer and economic growth. It started by looking at the theoretical framework where it discussed the theories on which the study is found: financial intermediation theory and modern economics theory. Financial intermediation theory brings out the role played by mobile money transfer systems in the wide financial system by enabling the transfer of funds from one individual to another, While the modern economics theory puts into perspective the changing times and adaption to the environment.

The chapter further looked at the measures of economic growth including Gross Domestic Product which is designed to measure the value of production of those activities that fall within the boundary of the national accounts system. Waverman et al. (2005) found a positive significant effect of mobile telecommunications on economic growth and emphasize that this impact "may be twice as large in developing countries compared to developed countries." Masinge (2010) studied the factors influencing the adoption of mobile banking services at the bottom of the Pyramid in South Africa. Masinge finds that with the convergence of banking services and mobile technologies, users are able to conduct banking services at any place and at any time through mobile banking. Erickson (2010) did study mobile money: cell phone banking in developing countries and established that transfer either local currency or mobile minutes. Mobile money can increase access to financial services. Blauw and Franses (2011) studied the impact of mobile telephone use on economic development of households in Uganda. Jensen (2007) and Aker (2010) find that the introduction of mobile phones reduced price dispersion in fish markets in India and grain markets in Niger respectively. Gikunju
(2009) examines the financial statements of the Postal Corporation of Kenya and finds that revenues and profits for its PostaPay money transfer service declined rapidly after the introduction of M-Pesa and suggests that Western Union’s and Money Gram’s profits have also declined over the same period. Jack and Suri’s (2010) empirical study shows that M-Pesa improves the ability of households to smooth risks. They contribute to the literature by providing quantitative estimates of the impact of M-Pesa in Kenya on a variety of economic and social outcomes including financial access and usage. From the above discussion, it is clear that the relationship between mobile money transfer and economic growth in Kenya has not been explored. This study therefore seeks to fill this research gap by investigating the relationship between mobile money transfer and economic growth.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents various stages and phases that were followed in completing the study. In this stage, most decisions about how research was going to be executed and how data was gathered, towards the completion of research. Precisely, the section covers; research design, target population, data collection and data analysis.

3.2 Research Design

The study adopted a Quantitative design. Quantitative researchers calculate measures of central tendency like mean and variability like standard deviation just as they do in descriptive research, but these measures alone do not provide evidence of significant differences or relationships among the variables under study (Cooper & Schindler, 2003). Further statistical procedures were used to answer the research question. This design allowed the researcher to measure and analyse the data. The relationship between the variables was studied in detail so as to make an objective and conclusive findings of the research.

3.3 Population of the Study

Population in statistics is the specific population about which information is desired. According to Ngechu (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated. The target population for this study included six mobile phone service providers who provided
mobile money transfer services. The total amounts transferred via the mobile for the past five years was collected and then correlated with the economic growth proxy which was Gross Domestic Product measured by change in GDP. Given that the Central bank had the gross figures of all the four mobile money transfer service providers, this study included all the six service providers hence it conducted a census.

3.4 Data Collection

The study used secondary data from the Central bank of Kenya, Mobile phone Companies and Kenya National Bureau of Statistics. Data was mainly obtained from the CBK covering the period between 31st January 2007 and 31st December 2011. Monthly and annual data was used in the analysis.

3.4 Data Analysis

The researcher conducted a correlation analysis in order to establish the relationship between mobile money transfer and economic growth. In finance, the correlation between two variables is a statistical measure of the relationship between the movements of the two variables (independent and dependent).

3.5.1 The Analytical Model

The variables of the study will comprise the N mobile money transfers and economic growth. The correlation analysis model will correlate mobile money transfer and economic growth. Thus, the correlation model will appear as:

\[ Y = \beta_0 + \beta_1 X_1 + \varepsilon \]
Where: 

\[ Y = \text{Economic Growth}; \]

\[ \beta_0 = \text{Constant} \]

\[ X_1 = \text{Mobile Money Transfer} \]

\[ \epsilon = \text{Error Term} \]

The error term stands for the effect of other factors other than mobile money transfer and economic growth and helps in stabilizing the model. This relationship, which was expressed by what is known as the correlation coefficient, represented by a value within the range of -1.00 to +1.00. A correlation coefficient of +1.00 indicates that two variables (mobile money transfer and economic growth) move in the same direction at all times. If economic growth gains in value, it is expected that mobile money transfer gain as well. A correlation coefficient of 0 indicates that the movements are totally random.

To test for the strength of the model and the relationship between mobile money transfer and economic growth in Kenya, the researcher conducted an Analysis of Variance (ANOVA). On extracting the ANOVA statistics, the researcher looked at the significance value. The study was tested at 95% confidence level and 5% significant level.
CHAPTER FOUR:

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research objective and research methodology. The study findings are presented on the relationship between mobile money transfers and economic growth in Kenya. The data was gathered exclusively from the secondary source which included the records at Central Bank of Kenya (CBK) and Kenya National Bureau of Statistics (KNBS).

4.2 Mobile Money Transfers

The study sought to find out the amounts of money (Billions) transacted through mobile money transfer services during the period of the study. The mobile money transfers are presented on a monthly basis with an annual average at the end. The findings were as shown in the table 4.1 below:

Table 4.1: Money transferred through mobile phones

<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annual Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td></td>
<td></td>
<td>0.06</td>
<td>0.22</td>
<td>0.48</td>
<td>0.72</td>
<td>1.07</td>
<td>1.58</td>
<td>2.07</td>
<td>2.83</td>
<td>3.51</td>
<td>3.77</td>
<td>1.63</td>
</tr>
<tr>
<td>2009</td>
<td>27.1</td>
<td>28.7</td>
<td>33.8</td>
<td>33.8</td>
<td>36.8</td>
<td>38.2</td>
<td>40.3</td>
<td>40.68</td>
<td>45.37</td>
<td>48.64</td>
<td>47.47</td>
<td>52.34</td>
<td>39.44</td>
</tr>
<tr>
<td>2010</td>
<td>48.5</td>
<td>49.9</td>
<td>56.1</td>
<td>51.8</td>
<td>58.1</td>
<td>58.1</td>
<td>61.8</td>
<td>61.53</td>
<td>68.51</td>
<td>71.79</td>
<td>70.27</td>
<td>75.87</td>
<td>61.02</td>
</tr>
<tr>
<td>2011</td>
<td>75.43</td>
<td>76.34</td>
<td>89</td>
<td>86.09</td>
<td>94.37</td>
<td>92.64</td>
<td>99.71</td>
<td>107.4</td>
<td>108.61</td>
<td>109.12</td>
<td>112.3</td>
<td>118.08</td>
<td>97.43</td>
</tr>
</tbody>
</table>

Source: (CBK, 2012)

From the study findings, the mobile money transfer services were launched in Kenya in March 2007 by Safaricom Limited. The amount of money transferred through the mobile
during this month totalled to Kenya Shillings 0.06 billion. The amount grew gradually thereafter to 0.22 billion in April, 0.48 billion in May, 0.72 in June and 1.07 billion in July. The amount transacted through the mobile phone grew steadily to close the year at 3.77 billion. The annual average for the year stood at 1.63 billion. In 2008, the amount transferred through the mobile phones started at 4.06 billion. By this time, more mobile service providers including Zain had launched their mobile money service called ZAP. The amount transferred still continued on an upward trend. In February 2008, it was 5.22 billion, 6.8 billion in March, 8.39 billion in April and in May; it exceeded the 10 billion mark to close at 10.9 billion. In June, the amount transferred stood at 10.92 billion, it grew to 16.76 billion in August and September 2008 then to 21.6 billion in October and November. In December, the amount transferred stood at 26.99 billion. The average monthly transfers for the year 2008 stood at 13.41 billion.

In 2009, the amounts transferred via the mobile phones continued to escalate at 27.1 billion which grew steadily during the year. In February 2009, the amount stood at 28.7 billion shillings then to 33.8 billion for the months of March and April 2009. In May and June, the amount transferred stood at 36.8 and 38.2 billion respectively. In July, the amount was 40.3 billion and 40.68 billion for the month of August. The amount transacted stood at 45.37 and 48.64 for the month of September and October. The amount transacted stood at 47.47 and 52.34 for the months of November and December 2009.

In 2010, the amounts stood at 48.5 and 49.9 for the months of January and February respectively. The amounts transacted continued to grow to stand at 56.1 billion for the month of March and 51.8 for the months of April. In May and June, the amounts
transacted stood at 58.1 billion each. In July, the amount transacted stood at 61.8 which grew slowly to 61.53 in August. In September, the amount transacted was 68.51 which increased to 71.79 and 70.28 for the months of October and November respectively. The amounts transacted closed the year at 75.87 billion giving an annual average of 61.02 billion.

During the year 2011, the number of companies offering mobile money transfer had increased to six, namely; Safaricom (M-Pesa), Airtel Networks (Airtel Money), Essar Telcom (Yu Cash), Orange Telkom (Orange Money), Mobile Pay (Tangaza) and Mobikash (Mobikash). The amounts transacted through these services were maintained high above 75 billion. In January 2011, the amount transacted stood at 75.43 billion increasing to 76.34 billion in February. The amounts stood at 89 billion in March before reducing to 86.09 billion in April. In May, the positive growth was recorded as the amounts transacted grew to 94.37 billion. In June however, the amounts transacted again reduced to 92.64 billion before increasing to 99.71 billion in July. In August, the amount transacted went above 100 billion marks to stand at 107.4 billion shillings. In September the amounts transacted stood at 108.61 while in October, the amounts stood at 108.12. For November and December, the amounts transacted stood at 112.3 and 118.08 billion respectively. The annual average stood at 97.43 billion up from 6102 registered in 2010. Notably, there was a characteristic fluctuation in transaction during this year.

From the above monthly amounts send through the mobile phone, the study computed quarterly amounts transacted through the mobile phone to conform to the economic growth data collected. The findings were as shown in the table 4.2 below:
<table>
<thead>
<tr>
<th>Year/Quarter</th>
<th>Quarter 1</th>
<th>Quarter 2</th>
<th>Quarter 3</th>
<th>Quarter 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2007</td>
<td>0.06</td>
<td>0.47</td>
<td>1.57</td>
<td>3.37</td>
</tr>
<tr>
<td>Year 2008</td>
<td>5.36</td>
<td>10.06</td>
<td>14.81</td>
<td>23.40</td>
</tr>
<tr>
<td>Year 2009</td>
<td>29.87</td>
<td>36.27</td>
<td>42.12</td>
<td>49.48</td>
</tr>
<tr>
<td>Year 2010</td>
<td>51.50</td>
<td>56.00</td>
<td>63.95</td>
<td>72.64</td>
</tr>
<tr>
<td>Year 2011</td>
<td>80.26</td>
<td>91.03</td>
<td>105.24</td>
<td>113.17</td>
</tr>
</tbody>
</table>

From the tables 4.2 above, the study established that the amount transferred through the mobile phone stood at 0.06 Billion in quarter one of the year 2007, 0.47B in quarter two, 1.57B in quarter three and 3.37B in quarter three. The amount transacted grew steadily during the year. In 2008, the amount transacted stood at 5.36B, 10.06B, 14.81 B and 23.40 B for the four quarters respectively. The upward growth trend was maintained in 2009 where it started off at 29.87 in quarter one, 36.27B in quarter two, 42.12B in quarter three and 49.48B in quarter four. In 2010, the amounts transacted were 51.50B in quarter one, 56.00 in quarter two, 63.95 in quarter three and 72.64B in quarter four. In the year 2011, the amount transacted was 80.26 B in quarter one, 91.03B in quarter two, 105.24B in quarter three and 113.17B in quarter four.


The study also collected data on the economic growth rates of Kenya on quarterly basis following limited monthly data for the study period 2007-2011. Economic growth was measured by gross domestic product for the study period. The findings were as presented in the table 4.2 below:
Table 4.2: Economic growth in Kenya (2007-2011)

<table>
<thead>
<tr>
<th>YEAR/QUARTERS</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR 2007</td>
<td>5.4</td>
<td>8.3</td>
<td>6.3</td>
<td>6.4</td>
</tr>
<tr>
<td>YEAR 2008</td>
<td>1.1</td>
<td>2.2</td>
<td>2.6</td>
<td>0.3</td>
</tr>
<tr>
<td>YEAR 2009</td>
<td>6.4</td>
<td>2.1</td>
<td>1.9</td>
<td>0.8</td>
</tr>
<tr>
<td>YEAR 2010</td>
<td>4.8</td>
<td>4.8</td>
<td>6.0</td>
<td>7.3</td>
</tr>
<tr>
<td>YEAR 2011</td>
<td>5.1</td>
<td>3.6</td>
<td>4.0</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Source: (KNBS, 2012)

From the table 4.2 above, the country registered an economic growth rate of 5.4% in quarter one, 8.3% in quarter two, 6.3% in quarter three and 6.4% in quarter four of the year 2007. In 2008, the GDP started at a low of 1.1% in quarter one then grew to 2.2 in quarter two, 2.6% in quarter three and 0.3% in quarter four. This year was greatly affected by the post election violence which led to destruction of a lot of property hence slowed economic growth rate. In 2009, the economy registered a 6.4% economic growth rate in quarter one, 2.1% in quarter two, 1.9% in quarter three and 0.8% in quarter four. For the year 2010, the economic growth rate was 4.8% in quarter one, 4.8% in quarter two, 6.0% in quarter three and 7.3% in quarter three. For the year 2011, the economic growth rate was 5.1% in quarter one which dropped to 3.6% in quarter two before gaining to stand at 4% in quarter three and 4.8% in quarter four. The years 2010 and 2011 witness high level of inflation and exchange rates which greatly impacted on the amount transferred via the mobile phones.

4.4 Correlation Analysis

As shown in the graph below, whereas annual average steadily grew, the economic growth is apparently fluctuating and thus not directly corresponding to one another. In
order to establish the relationship between mobile money transfer and economic growth
the researcher conducted a correlation analysis. Using Statistical package for the social
Science (SPSS) version 2.1, the researcher used the Correlation analysis to determine the
extent to which changes in the economic growth in Kenya are associated with changes in
the amount of money transacted through mobile phones. The data for a correlation
analysis consists of two input columns (Average annual amounts transacted and
economic growth rate). The findings are well illustrated in the table 4.3 below:

Table 4.3: Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>Economic Growth</th>
<th>Mobile Money transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Growth</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>20</td>
</tr>
<tr>
<td>Mobile Money transfers</td>
<td>Pearson Correlation</td>
<td>.029</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.903</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>20</td>
</tr>
</tbody>
</table>

From the correlation analysis above, the study shows that there is a weak positive
insignificant correlation between economic growth and mobile money transfer in Kenya.
This is because the Pearson correlation coefficient is +0.029 which is very low with the
significance two tailed test figure being 0.903 which is greater than 0.05.

4.5 Interpretation of the Findings

Mobile financial services are among the most promising mobile applications in the
developing world as technology and globalization take toll. Mobile money could become
a general platform that transforms entire economies through increasing financial
deepening by spreading financial services to areas viewed as less profitable by the
mainstream financial intermediaries like Banks. While the benefits of mobile money payment systems are clear in term of convenience and flexibility in operations, there is little direct relationship with economic growth in Kenya. This is explained by the weak positive insignificant correlation between economic growth and mobile money transfer in Kenya.

Because the mobile money industry exists at the intersection of finance and telecommunications, it has a diverse set of stakeholders, with players from different fields in competition. Mobile network operators, banks, and increasingly new entrants, such as payment card firms, continue to catalyze the industry with innovative offerings, all these provide job opportunities to citizens of an economy thereby improving their living standards. Many individuals are employed as shop attendants supervisors and other positions. This is important in the recorded per capita income of the country.

It also contributes to the economic growth of the country by ensuring balanced development by lowering the cost of sending and receiving money as opposed to other means.

In addition, mobile money transfer services contribute indirectly to economic growth through its fundamental support to business start ups. These findings are in line with those of Kendall, Maurer, Machoka and Veniard (2011) who argued that in areas where it has proved successful, mobile money has created a platform for start-ups to build upon. The start up businesses can be improved by the funds received from family and friends from abroad.
Through mobile money transfer services, the country is able to improve its financial inclusion position. Poverty is more than just a lack of money because it involves a lack of access to the instruments and means through which the poor could improve their lives. Exclusion from the formal financial system has increasingly been identified as one of the barriers to a world without poverty. In many developing countries, more than half of households lack an account with a financial institution, while small firms frequently cite difficulty in accessing and affording financing as a key constraint on their growth. Mobile money could transform financial inclusion. In Kenya, Mobile Money transfer services are now widely acknowledged and used. For example, the mobile money transfer can now be used in shopping besides doing other duties. The findings of this study arc in line with those of Mas and Radcliffe (2010) who argued that 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 which focuses on building the payment 'rails' on which a broader set of financial services can ride. They further add that this exclusion does not necessarily mean that the poor lack active financial lives and in fact, the fragility of their situation has led to the development of sophisticated informal financial instruments. However, the use of only informal instruments means that the poor are limited in their ability to save, repay debts, and manage risk responsibly. On a macroeconomic level, these financial constraints on the poor can slow economic growth and exacerbate inequality (Demirgüç-Kunt, Beck, and Honahan 2008).
CHAPTER FIVE:

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presented the summary of key data findings, conclusions drawn from the findings highlighted and policy recommendations that were made. The conclusions and recommendations drawn were in quest of addressing research objectives of establishing the relationship between mobile money transfers and economic growth in Kenya.

5.2 Summary

Mobile money offers new possibilities for making financial services more inclusive in Kenya and beyond as mobile phone service providers seek to enlarge their market share by tapping into the international market. For example, Safaricom extended its international mobile phone money transfer services in the United Kingdom in 2012. This is hoped to spur the level of activity amongst Kenyans living in the Diaspora with their family and friends back home. Unlike conventional banking and financial services, mobile network operators (MNOs) have made huge investments to create networks that reach further and deeper into rural areas historically marginalised in an effort to satisfy their demand to communicate thereby promoting financial inclusion.

During the study period, the amount of money transacted through the mobile money transfers increased steadily from 0.06 billion in 2007 at the onset to 118.08 billion by the last month of the analysis. The trend in the economic growth was however affected by other macroeconomic variables like the high inflation that depreciated local currency and
post election violence in 2007/2008 which led to declines in the recorded economic development. However, the mobile money transfer during the period of study continued to increase steadily as more and more subscribers joined the service. In addition, the number of companies providing the service of mobile money transfer has also grown tremendously during the period of the study from one firm in 2007 to six firms by the end of the study period. The growth has been motivated by the convenience of the service as the service does not require an individual to have a bank account in order to transact. Further, customers may also transact business of mobile money transfer platform from anywhere thus offering convenience.

The correlation analysis conducted established that there is a weak positive relationship between economic growth and mobile money transfer in Kenya as explained by the Pearson correlation coefficient of +0.027 which is deemed very low with the significance two tailed test figure being 0.966 being greater than 0.05 at 95% confidence level. This shows that although there is a positive correlation between mobile money transfer and economic growth in Kenya, the relationship is insignificant to be directly proportional. This could be because the application of mobile money transfer happens in a separate setting and may not have a direct impact on the registered economic growth rates. From the above presentations, it was evident that there was a relationship between mobile money transfer and economic development. However, mobile money transfer is an important element of economic development because of its benefits of promoting financial deepening and inclusion which ensures that businessmen at the periphery can access financial services which in term improves their credit standings.
Mobile money transfer supports economic growth through provision of job opportunities which provides earnings to citizens hence improved living standards of the citizens. In addition, mobile money transfer increases financial inclusiveness and deepening.

5.3 Conclusions

From the research findings presented in chapter four and above summary of findings, the study concludes that there is a weak positive relationship between mobile money transfer and economic growth in Kenya. This could be attributed to the trends recorded in the two variables where one maintained a positive growth rate while the other was affected by many variables. Economic growth was majorly affected by macro-economic variables like post election violence, inflation and foreign exchange rates among other macro-economic variables which were outside the scope of this study.

5.4 Policy Recommendations

From the above conclusion, the study recommends that policy makers consider mobile money transfers in their formulation of policies on economic development. This is because despite negligible relationship between mobile money transfers and economic growth, the impact could be pronounced if much change is recorded. This is because the relationship may not be direct but an indirect one resulting from the convenience that the mobile money transfer services offers to the economy.

First, mobile money transfer provides employment to a majority of Kenyans and improves the level of financial deepening and inclusion thus increasing the chances of the
poor to access the main stream financial services. Mobile money transfer also increases convenience and reduces the costs of sending and receiving funds from abroad.

5.5 Limitations of the Study

A limitation was regarded as a factor that was present and contributed to the researcher getting either inadequate information or if otherwise the response given would have been totally different from what the researcher expected. The main limitations of this study were: the data used was secondary data generated for other purposes. The measures used may keep on varying from one year to another subject to the prevailing condition. For example the economic growth was deeply affected by the post election violence which slowed down economic development even though the mobile money transfer still registered a positive growth.

Another limitation of the study included the fact that the inflation rates existing in the country have forced the Central Bank to raise its CBR rate which is being passed on to other sectors in the economy thereby influencing the overall economic development of the country. This together with the weakening Kenya shilling against the international currencies may have greatly impacted the rate of economic growth rates recorded.

5.6 Suggestions for Further Studies

The study suggests that further research be conducted on the relationship between mobile money transfers and the levels of loans and non performing loans in Kenya. This is because mobile money transfer has been promoted, to a large extent, financial sector deepening in the country which is an important variable in providing loanable funds.
The study further recommends that another study be conducted in Kenya on the relationship between mobile money transfer and economic growth after five years to compare with the findings in this study so as to assess the contributions of mobile money and economic growth since this study.
REFERENCES


APPENDICES

APPENDIX 1: LIST OF MOBILE MONEY TRANSFER COMPANIES IN KENYA

<table>
<thead>
<tr>
<th>S/no.</th>
<th>List of Companies</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safaricom</td>
<td>M-Pesa</td>
</tr>
<tr>
<td>2</td>
<td>Airtel Kenya</td>
<td>Airtel money</td>
</tr>
<tr>
<td>3</td>
<td>Orange Telkom</td>
<td>Orange Money</td>
</tr>
<tr>
<td>4</td>
<td>Yu</td>
<td>YuCash</td>
</tr>
</tbody>
</table>

APPENDIX 2: DATA COLLECTION SHEET

<table>
<thead>
<tr>
<th>Year</th>
<th>Mobile Money Transfer (Transaction volume – Annual Summary)</th>
<th>Economic Growth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>