EFFECT OF MOBILE PAYMENTS ON THE GROWTH OF PLASTIC CARD PAYMENTS OF FINANCIAL SECTOR IN KENYA

BY

KELVIN ACHONO OMINA

D63/71112/2014

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN FINANCE, SCHOOL OF BUSINESS UNIVERSITY OF NAIROBI

2016

DECLARATION

I, the undersigned, declare that this research project is my original work and has not been presented for academic purposes at the University of Nairobi or any other university for academic credit.

Signed…… Date: ……

KELVIN ACHONO OMINA

D63/71112/2016

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

Signed: ……. Date: ……..

Dr. Cyrus Iraya,

Senior lecturer,

School of Business,

University of Nairobi

DEDICATION

This research project is dedicated to my parents who encouraged me to begin the Master Program and supported me both financially and morally during the course of the entire Master Program.

Special dedication to my two siblings, Brian and Winnie, who have always remained my source of inspiration and desire to excel academically

ACKNOWLEDGEMENT

First, I give glory to the Almighty GOD for the grace he showered unto me and for being with me throughout the study. I also extend my indebtedness and appreciation to my project supervisor Dr. Cyrus Iraya for remarkable supervision, advice, motivation, guidance and mentorship throughout the project. He kindly, read the paper and offered detailed advice on the theme and organization of the paper.

Secondly, many thanks to the University of Nairobi, School of Business for facilitating my course work and writing of the project. I also thank Central Bank of Kenya and Communication Authority of Kenya for providing me with data by posting it on their websites.

Finally, yet importantly, I express utmost gratitude and special thanks to my family especially to my father Mr. Justyus K. Omina, who has made possible that my dream of studying come true.

ABSTRACT

This study examined the effect of mobile payment on the growth of plastic card payments of financial sector in Kenya, that is, whether introduction of mobile payment solutions will increase or decrease the usage of plastic card payments of financial sector.

The study selected a census research design. The secondary data of financial sector for the period between 2013 and 2016 was used. The data was drawn from the websites of Central Bank of Kenya (CBK) and Communication Authority of Kenya (CA).

Descriptive statistics like mean scores, percentages and frequencies for each variable was calculated. The analysis involved multiple regression of variable under study, that is, the growth of plastic card payments represented by rate of growth in the number of plastic cards payments, number of mobile payments, number of point of sales and the amounts of demand deposits in financial institutions.

Using OLS regression method, inferential tests including the Pearson Product –Moment Correlation Coefficient and regression analysis was conducted. The result established coefficient of determination of -0.865 (R= -0.865) between mobile payments and plastic card payments of financial sector in Kenya. The study recommends that financial sector should revise its policies to include involvement of telephone service providers during the introduction and development of new alternative banking channels. This will enable financial sector players remain competitive.

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ABBREVIATIONS

ACH Automated Clearing House

AFDB African Development Bank

ATM	Automated Teller Machine
BC	The Bank Centric Model
B2B	Business to Business
CBA	Commercial Bank of Africa
CBK	Central Bank of Kenya
CM	Collaborative Model
C2B	Customer to Business
C2C	Customer to Customer
DD	Demand Deposit
DOI	Diffusion of Innovation Theory
EFT	Electronic Funds Transfers
ICT	Information Communication and Technology
ISP	The Independent Service Provider Model
KDIC	Kenya Deposit Insurance Corporation
KEPSS	Kenya Electronic Payment and Settlement System
KES	Kenya Shillings
MIT	Massachusetts Institute of Technology
MP	Mobile Payments
MTS	Mobile Telephony Subscriber
OC	The Operator centric Model
PDAs	Palmtop Computers
PEOU	Perceived Ease of Use
PIN	Personal Identity Number
PoS	Point of Sale
PSTN	Public Switched Telephone Network
PU	Perceived usefulness
SACCOs	Savings and Credit Co-operatives
SMEs	Small and Medium-size Enterprises
SMS	Short Messaging Service
SPSS	Statistical Package for Social Sciences
TAM	Technology acceptance model

USD	United States Dollar
VIF	Variable Inflation Factor

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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Payment and clearing functions of the financial sector are important and historical. The intermediary roles of financial institutions are not only deposit and credit operations but they are also mandated to facilitate payments between parties by processing non- cash payment instructions given to them by their clients (Rider, Tajima & Macmillan, 1998). The two modes of payments available in Kenya are cash payments and non-cash mode of payments. Basically, Cash instrument of payment is the use of the government issued bank notes, also known as the legal tender. Non cash instruments on the other hand, are payments processed by way of fund transfers through a financial system (CBK, 2014). It can either be electronic or paper based fund transfer. Paper based fund transfers include bills and cheques while electronic ones include such products as Kenya electronic payment and settlement system (KEPSS), Plastic cards usage and mobile payments.

Even though generally the number of non-cash payments has been on an increase, market share of some instruments such as bills, plastic cards and cheques has been on decline. This has been as a result of high reliance of people globally to the cyber space. E-commerce has indeed revolutionized the entire spectrum of modes of payment by providing such an enabling environment for innovative modes of payments that are increasingly replacing the government issued bank notes and automated checking system as modes of payments (Cohen, 2001).

Information Communication and Technology (ICT) advancement has had an integral role in the introduction and growth of non-cash mode of payments in Kenya. Unlike in the past where one

was required to physically visit a banking hall to pay for his/her bills, fees, rent or any other financial obligation, Nowadays customers can conveniently effect those payments from anywhere, anytime using either their mobile phones or online through the internet (Aker & Mbiti, 2010). Most of the financial institutions have partnered with mobile phone service providers for the provision of mobile banking to their customers.

1.1.1 Mobile Payments

A mobile payment is any payment that is initiated, authorized and confirmed using a mobile device (Au & Kauffman, 2007). Examples of mobile technology devices are mobile phones, tablets, palmtop computers (PDAs) and any other device that can be connected to a mobile service network (Karnouskos & Fokus, 2004). Mobile payment system (m-payment) is naturally preceded by electronic payment (e-payment). Automated Teller Machines (ATMs), interbank networks, plastic cards, and e-money transfers facilitated growth of e-payments and with the introduction of mobile devices; m-payment system was innovatively introduced. It is possible to categorize mobile payment solution into two classes namely: classification according to the nature of the transaction effected, and classification according to technology adopted to implement the solution.

Mobile payment solutions according to the modes of payments effected are Business to Business, denoted as (B2B) payments, Customer to Business (C2B) payments and Customer to Customer (C2C) payments. These payment solutions should be universal in terms of both low and high value payments, otherwise referred to as micro and macro-payments (Karnouskos & Fokus, 2004). For instance it is possible to send as little as KES 10 to another M-Pesa customer in Kenya; the highest amount one can send using this service is KES70, 000 (Safaricom, 2014).

These payment solutions can also be categorized according to the technology adopted. Models under this category includes; The Operator centric Model (OC), The Bank Centric Model (BC), the Independent Service Provider Model (ISP) and Collaborative Model (CM). With OC model, the telecommunication network provider offers the infrastructure, operates the transactions and compensates the system. The m-payment system must be connected to either a bank account or a cash deposit must be made for any payment to be effected after which the account is debited. At this particular point, liquidity must be provided into the system by a third party and the operator must compensate third parties for their services. BC Model has the operator offering the infrastructure that allows e-float to leave and enter its system via an interface. BC Model is less popular than OC Model probably due to the fact that the infrastructure (technology) is held by the operator and also because there are fewer operators than there are banks. The partner banks must compensate the operators in form of fees and commissions for using this technological platform. With ISP Model, a third party, who is neither a telephone operator nor a financial institution plays the role of intermediary bring together the operators, banks, traders and customers. Examples of an ISP Model are internet companies such as PayPal. Last but not least is CM Model which involves a partnership amongst the operators, banks and third parties which creates a link between them. (Chaix & Torre, 2012)

Aker and Mbiti (2010) established that more than 60 percent of African population had mobile phones compared to merely 10 percent in 1999. It was also reported that mobile phones were 10 times more than landline phones (in use) in Africa as at that time. In Kenya, mobile payments has revolutionized financial sector due to the growth of mobile phone coverage. It is also important to note that m-payment services are used to make mostly micro-payments and long distance remittances. By so doing, Mobile transfer services have been able to rope the unbanked

into formal financial sector, as well as convenience those already using banking services (Lachaal & Zhang, 2012).

The main services by financial sector through mobile phones include interface for conducting banking, capital market transactions, administering accounts, making payments including utility bills and money transfer services.

1.1.2 Plastic Card Payments

Card payment is a unique electronic payment solution that is sophisticated and acceptable as a means of exchange. This mode of e-payment uses plastic devices with embedded integrated circuit to settle financial obligations. They have the ability to distort and store financial data, and handle numerous applications on a single card securely (Amedu, 2005). In plastic card payments, financial institutions such as commercial banks play their roles as intermediaries to settle the aroused accounting relation between two clients. During processing of the plastic card payments the open accounts of both the payer and the payee should have their units of banking system involved (Dimov, 2011). There are various types of plastic cards of payment, the most popular ones being credit card, debit cards, charge cards and ATM cards.

Kenya's first plastic card was a charge card launched in 1967 by Diners club Africa limited (Mahinda, 1991). In 1984, Diners club collapsed and Royal card took over the franchise of Diners. Later on, in 1989, Barclays Bank entered the card market followed by merchant card. Plastic card usage and e-commerce in general was on an increase transforming modes of payment landscape until early 2000s when m-payment technology was innovatively conceptualized and adopted. Plastic card payments have been on a decline from 2006 to date.

Currently, plastic card payments are acceptable in retail stores, airlines, hotels, online shops, chain stores and other merchant outlets. The major worldwide card associations seeking to have

their payments cards acceptable in the widest possible range of merchant outlets include: Visa International, MasterCard, American Express, JCB card and Diners club card. Locally providers of plastic card solutions include: Interswitch, Kenswitch and Nakumatt Global. Visa and MasterCard are the largest two major card associations in the world. Each of them has over 12 million acceptance location throughout the world (Steve, 1995).

1.1.3 Effect of Mobile Payments on the Growth of Plastic Card Payments

Adoption of mobile payments should lead to a decreased growth of plastic card payments. This is a relationship characterized by economic growth leveraged on new; improved and innovative technology. The relationship between plastic card payments and mobile payments illustrates how differentiation strategy can affect performance of a uniquely differentiated product. The main objective of differentiation strategy is creating a competitive advantage characterized by valuable features, such as quality, innovation and customer care (Porter, 1985).

Competitive advantage of such differentiated products can be attributed to the PU and PEOU as postulated in the Technology Acceptance Model (TAM). Mobile payment is perceived to be useful due its flexibility, reliability, efficiency and availability unlike its substitutes (Davis, 1989). The usage of mobile payments is rapid and its acceptance as a mode of payment is excellent. This is attributable to the factor that introduction of mobile money was an innovation whose perceived advantages out-weighs its limitations.

1.1.4 Financial Sector in Kenya

Financial sector is the interaction of markets and all therein, governed by a set of common regulatory framework. These interactions usually involve both short-term and long-term lending

and borrowing of funds from lenders to borrowers for consumption and investment purposes through financial intermediaries such as commercial banks and investment banks. The main functions of the financial sector include mobilization of funds through savings, management of risk by lending the mobilized funds to a large number of borrowers and being able to cover default risk through interest earned on the other performing loans. Other functions include rendering of such expert advice to its clients regarding investment opportunities so as to reduce information costs, monitoring borrowers and easing trading (Sirri & Tufano, 1995).

Financial sector in Kenya comprises of the banking industry, insurance industry, capital markets, Savings and Credit Co-operatives (SACCOs), pension sub-sector, safety nets and resolution institutions such as the Kenya Deposit Insurance Corporation (KDIC). Currently, banking industry in Kenya comprises of 43 commercial banks, 1 mortgage finance company, 9 micro-finance banks, and 7 representative offices of foreign banks, 2 money remittance providers, 2 credit reference bureaus and 112 foreign exchange bureaus. Most of these financial institutions have introduced mobile banking as an alternative channel of banking (FSR, 2013). This study looks at the growth of plastic cards provided by these institutions and how the introduction of money payment system has affected them

Mobile payment grew over the 9 year period from 480,000 transactions to an impressive 824,260,000 transactions in 2014 beating the other four most popular modes of payments. This remarkable growth trend represented a 76.3 percent of the total non-cash payment transactions in 2014 up from a mere 0.8 percent of the total non-cash payment transactions at its year of inception. Ironically, most of the other modes of payments lost substantially their market shares

to m-payment. For instance, although use of plastic card had increased from 58,630,000 transactions in 2007 to 223,830,000 transactions in 2014, it decreased in terms of percentage of the total number of non-cash payment transactions from 62.79388 percent in 2007 to a disappointing 20.72753 percent in 2014 (CBK, 2014).

1.2 Research Problem

Technological innovations are often cited as potential determinants of growth in both academic and economic studies. Given the current global trends in the financial sector, there is need for the industry players to identify and adopt innovative technologies as differentiation strategy for them to have competitive advantages (Porter, 1985). Advancement of ICT has brought about new modes of payments and service delivery channels. Enterprises strive to have competitive advantages over their competitors by offering differentiated products characterized by unique features (Davis, 1989) using innovative technology.

A number of scholars and economic researchers in operations improvement have in recent years made assumption that there exist a correlation between technological innovation and performance (Upton & Kim, 1999). Unlike in the past when senior management had only a simple objective of organizational stability, today's executives have enormous challenges. They must show tangible results including sustainability, creation of wealth and efficient management of assets allocated to them by the shareholders. Therefore, financial institutions must adopt to change for their survival through innovation (Kanter, 1999).

In Kenya, use of mobile money has been on an increase due to the adoption of mobile telephony technology. This implies that more Kenyans who did not have accessibility to financial services

can now access these services. It is said, economies with advanced ICT infrastructures are characterized with sophisticated modes payments that are reliable, low risk, easily accessible, faster and convenient. In such economies there is low cash circulation since most transaction can be effected using non-cash instruments. According to an economic report by AFDB, the use of non-bank financial services increased from 7.5 percent in 2006, just a year before the inception of M-Pesa, to 17.9 percent in 2009. This increment is attributable to the then new service by Safaricom - the M-Pesa (Lachaal & Zhang, 2012). This implies that more Kenyan can access to financial services than ever before because of mobile money services such as M-Pesa.

Several studies have been carried out about mobile money: In their study for instance, Aker and Mbiti (2010) show the evolution, coverage and adaptation of mobile money. On performance, Asiabugwa and Munyaki (2013) established in their study on adaptation of e-commerce by banks in Kenya that e-commerce platforms have a positive influence on the performance of banks. Central Bank of Kenya also indicated in its annual report of 2010 a faster growth of mobile money particularly M-Pesa in terms of volume and value of money transferred (CBK, 2010).

Therefore, whereas there are several studies on adaptation and growth of mobile payments no research has been carried out specifically about mobile payments implications on plastic cards. There has been assumption that mobile payment system only affects cash payments and the unbanked population of Kenya. This study aims at filling this knowledge gap by answering the research question: what is the effect of mobile payments on plastic cards.

1.3 Objective of the Study

The objective of this study is to establish the effect of mobile payments on the growth of plastic card payments.

1.4 Value of the Study

This study will be significant to various groups including academic researchers who are interested in learning more about mobile payments in the country. Currently, there is no study carried out in Kenya specifically about effects mobile payments on plastic card payments. The only research that has been carried out is about the effect of mobile payments on the overall financial performance of financial institutions.

This study will also provide knowledge that can help Kenyan policy makers appreciate the significance of mobile payments while coming up with regulatory frameworks aimed at consumer protection. Currently, there is no specific regulation governing mobile payments. It is also evidence that CBK is not in control of this form of payment and therefore, water-tight legislations must be put in place.

Lastly, financial analysts, marketers, key accounts managers and other financial sector players can use the methodology from this study in predicting future customer trends. This will help these institutions make informed decisions that will give them relative advantage over their competitors

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Chapter two looks at different theories relating to growth, relative advantages and innovation. It further evaluates empirical studies carried out in this area and their conclusions. It focuses at both theoretic and empirical publications on product innovation and its implications including Diffusion of Innovation theory, Technology Acceptance Model and differentiation strategy. It also examines growth determinants of payment solutions offered by financial sector in Kenya.

2.2 Theoretical Review

There are numerous theories that try to explain determination of growth; this study will only review those specific ones relevant to this study. Growth plays a very important role as a quantifiable measure that companies and industries use to meet their strategic and operational goals. Therefore it is very important to appreciate the implications that innovation, such as mobile payments, has on performance of plastic cards by first understanding theories related to innovation, competitiveness and new product development. The following theories will inform this study.

2.2.1 Technology Acceptance Model (TAM)

TAM is a well-known theory applied in modeling, adoption of modern technology and adoption in information systems research. TAM was suggested by Fred Davis in 1985 in his doctoral thesis at Sloan School of Management- MIT. It was developed to advance a better understanding of the adoption and usage of IT (Davis, 1989).

TAM postulated two cognitive believes: PU and PEOU. This theory states that the behavioral intentions of the user, the system's perceived ease of usefulness, attitude and perceived ease of

the system influences one's actual use of a technology system. These influences can either be direct or indirect. Perceived Usefulness (PU) is the extent to which an individual believes that his or her work performance would be increased by using a given system and Perceived Ease of Use (PEOU) is defined as the extent to which an individual believes that using a certain system would be effortless.

Cheah et al. (2011) identified in their empirical study that PU has a direct relationship with adoption mobile banking. This means that users are more likely to accept m-banking services if m-banking is of use and benefit to them. Similarly, it was established that PEOU also had a positive relationship with mobile banking adoption. Liu et al. (2009) later established that the effect of PEOU on the intention to use was not as strong as that of PU and previous online learning experience. This means that when a system is easy to use, users feel it is more useful and therefore their intention to use the online learning community becomes stronger. In a study related healthcare, it was established that self-efficacy and PEOU had a much stronger total influence on the behavioral intention. In the same study, PU was on contrary found to have moderate effects on behavioral intentions.

TAM comes out as a useful theory to carry out a valid study on the effect of mobile payment on the growth of plastic card payments. The theory establishes that PU has a direct positive effect on the behavioral intentions to use mobile payment. It also proves that PEOU has a positive effect on both PU of m-payment and behavioral intention to use m-payment. It then implies that all this perceptions about m-payment brings it out as a better, reliable and more superior in comparison to plastic card payments.

2.2.2 Diffusion of Innovation (DOI) Theory

DOI theory was developed by Rogers in 1983. Rogers described innovation diffusion operation as one which is characterized by reduced uncertainty level in behavior amongst potential adopters during the introduction phase of technological innovation. Innovation is an idea, method or object viewed by members of the society as new. Diffusion, on the other hand, is the process through which innovation is communicated over time in social systems (Mahajan & Peterson, 1985). Sevcik (2004) outlined in his empirical study that not all innovations become a success; again some innovations might take more time to be adopted than others. Some might be slowed down by resistance to change. DOI consists of six components: individual user characteristics, innovation characteristics, diffusion channels, innovativeness and adopter categories, distribution over time and the individual adoption procedures. The main features greatly affecting the pace at which adoption is likely to taking place are relative advantage, complexity, observability, triability and compatibility.

Robinson (2009) defined relative advantage as the extent to which innovation is perceived to be better than another idea by a section of end-users. It can be measured in terms that matter to the users such as satisfaction level, degree of convenience, social prestige status and economic advantage.

Compatibility is described as the extent to which an innovation is perceived as being in line with past experiences, values and needs of its potential users. Contrary to an innovation, an idea cannot be adopted as rapidly as an innovation because it is incompatible with its potential users' values, norms or practices.

Complexity refers to the extent to which an innovation is perceived as being easy to use or complicated. Observability on the other hand, is watching an innovation with an objective of wanting to know how it works and how safe or beneficial for use the innovation is. It's the extent to which an innovation's results are observable to others. Finally, trialability is the extent to which an innovation can be sufficiently tested prior to adoption.

TAM and DOI are exceedingly alike in some constructs and they boost each other. For instance complexity is similar to PEOU and Relative advantage is similar to PU (Wu et al., 2007). Lee et al. (2011) combined TAM with DOI in his work on employees' intentions to use e-learning systems. It showed that relative advantages and compatibility have significant positive effects on PU. This implies that employees in an organization needs to be convinced that e-learning systems meets their jobs' needs and be assured that it would be useful to them for them to adopt it. DOI theory was also used to study the adoption of e-government in emerging economies. Its outcome showed that the extent of relative advantage can be applied in predicting internet users' likelihood to adopt e-government. It revealed that intentions to use e-government services grow as relative advantage grow. It was also established that image and ease of use are not good determinants of intention to use e-government.

DOI can be used to carry out a valid study on effect of mobile payments on growth of plastic card payments. This review demonstrates how compatibility has a direct positive impact on PU of m-payment. Compatibility has also a direct positive effect on PEOU of m-payment. These perceptions about mobile payment make it the 'better option' over plastic card payments.

2.2.3 Differentiation Strategy

Differentiation strategy is also known as segmentation strategy. It helps in establishing a strong identity of a product brand in a specific market by introducing different varieties of the same basic product under the same brand name into a particular product segment. It differentiates a product brand from its competitors and creates a unique image (Davidow & Uttal, 1989). Differentiation strategy's objective is creating a competitive advantage that is characterized by valuable features, such as innovation, customer care and quality. Differentiation can be categorized according to design, texture, delivery system, size (quantity), taste, the product itself and a broad range of other factors. With the above mentioned features, companies are rewarded with a premium price because of the additional value they provide to the customers.

Segmentation approach aims at developing and marketing unique products for different customers. It is applicable where a company has clearer competitive advantages and can sustain costly advertising campaigns. Baum and Oliver (1992) established that firms must have highly qualified personnel with skills such as strong creativity, strong research and development skills, strong marketing skills, good communication skills, good cooperation and distribution skills and strong product engineering skills for them to maintain this strategy. In their research, Phillips and Peterson (2001) concluded that the most common way of distinguishing a firm's offers from those of its rivals is product differentiation.

For differentiation strategy to succeed, the firm must develop products or services that offer unique attributes. These products or services must be of value to its customers and must be perceived to be better and different from its substitutes. Suppliers may increase prices of such

products or services because of their unique attributes (Porter, 1985). Apart from cost, those unique attributes and other perceptions create value for the customers. Therefore, many firms pursue differentiation that is valuable to its customers. This implies that investing in product Research and Development is very important (Porter, 1980).When a firm is able to sell its differentiated goods at a price higher than its cost; it allows the firm to outperform its competitors and earn above average returns (Dess & Davis, 1984). Mobile payment has come out as a unique service with a competitive advantage over its substitutes including plastic cards.

2.3Determinants of Growth of Plastic Card Payments

There are different factors that can affect the growth of plastic cards in terms of volumes of transaction. This growth depends on the users' perception of the product vis-à-vis its substitutes and how such factors are incorporated in strategic planning of the financial sector players. Business strategy is the direction and breadth of an entity's objective covering a longer period of time, which is meant to achieve advantages in the dynamic environment through the alignment of resources and expertise with a view of maximizing stakeholders' expectations. Some of these factors that may affect the growth of plastic cards payments are discussed below:

2.3.1 Mobile Payments

Mobile payment is also referred to as Mobile Commerce. It is a form of non-cash instrument of payment used by customers in pay for goods and services. In his study, Ovia (2005) indicated that financial sector of the 21st century was (still is) operating in a complex and competitive environment characterized by ever changing economic climate with ICT at the center of it all. Financial sector players were (still are) taking advantages of product innovation to provide improved customer services in the face of competition and faster services delivery channels that improve productivity. Environment that businesses operate in today is very dynamic and experiences faster growth due to innovation, change in technology, creativity, increased awareness and changes in customers' preferences (Woharem, 2006). Mobile payments are an example of such innovations in Kenya.

Adoption of mobile payment solutions has revolutionized modes of payments and more people tend to use it more compared to plastic cards. Due to its unique features mobile payment is the most popular form of non-cash payment in Kenya. It is more popular than checking system and plastic cards provided by commercial banks. Therefore, use of mobile payment has negative effect on plastic cards because most of the users of plastic cards are replacing it with mobile payments which are perceived to be flexible, reliable and convenient.

2.3.2 Point of Sales

According to World Development Indicators (2015), PoS terminals are the equipment used to manage the selling operation in the locality where the transaction actually takes place using a salesperson-accessible interface. The availability of such terminals is an important indicator of quality of service. When a financial sector has a plastic card payment system that experiences frequent breakdowns or has PoS terminals which are not enough for the market it means that its

operations are more likely to be unreliable and this might lead to customer complaints every so often. These inefficiencies might also lead to brand switching; from Plastic card usage to transacting using mobile payments.

Wang and Lin (2011) suggested ways of saving reliability in banking service in their study. They said that the bank management should apprehend the processes and work flow of bank counter service system, establish all possible failures of a system at the implementation stage and make recommendations on how to optimize bank counter service reliability in accordance to the findings. PoS terminals are supposed to be reliable. Reliability leads to performance stability and proper service delivery that meets customers' expectations. Some of these indicators include the accuracy of the accounts, proper provision of banking services, timely service provision by bank employees and steadiness of performance of level of service (Fang et al., 2013). Currently there are no enough PoS terminals in the economy and again most of this terminals are not portable and this is why Mobile payments is substituting plastic payments simply because it is ready available and acceptable by most people

2.3.3 Mobile Telephony Subscribers

The International Telecommunication Union (2005) defined mobile telephony subscribers (MTS) as end users of transportable telephones that subscribes to an automatic public mobile telephone service which by using a cellular technology one is able to access to the Public Switched Telephone Network (PSTN). The growth of MTS will increase the number of mobile payment transactions. This is because the mobile payment technology uses portable telephones to effect its transactions.

Migdadi (2012) explains how in 1990s it became a global trend when most of the international commercial banks started reducing their branch network as a result of their investments into alternative service delivery channels. The use of alternative channels such as ATMs were on an increase and operation costs reduced tremendously. For instance Bank of America closed about 33% of its entire branch network in the 1990s. The history seems to be repeating itself; more people are using mobile payments solutions than ever abandoning plastic card payments.

2.3.4 Demand Deposits in Kenyan Banks

Grimsley (2003) defined demand deposit (DD) as the money that one deposits into a bank account from which a withdrawal can be made at any given time without prior notice to the bank. One can make a demand for the money deposited in the DD account through the following banking channels: over the counter (before a bank teller), through the usage of ATM, debit card, online banking transfers, by drawing a check and by using mobile banking services.

Most people are attracted to mobile banking services because it is efficient. Customers are capable to access a spectrum of m-banking services such as checking their bank account data through a mini statement. Customers had to physically visit their branches to confirm their financial transactions and status of their deposits (Saoji & Goel, 2013). Therefore, growth in DD in the banks should lead to increased use of plastic card payments. This is because most of the alternative banking channels, currently available, allows the usage of plastic cards. Aplastic card use can access the deposited money through the ATM, debit card at a PoS machine and online banking platform.

2.4 Empirical Studies

Amin (2012) investigated the factors that influence customers of Sabah bank's intention to use mobile banking in Malaysia. This case study further examined how technology can be utilized to provide m-banking services including the perceived usefulness and ease of use. It comprised sample of local residence of Sabah and a model of 200 questionnaires. The study further indicated that perceived reliability, self-effectiveness and enjoyment are determinants in the prediction of intentions of Sabah to utilize m-banking. The case study results indicated that the PU and perceived ease have lower influence in comparison to perceived enjoyment, perceived reliability and perceived self- coherence which were established to have a much higher impact on mobile banking use. The above study shows reasons as to why mobile payment has relative advantage over plastic card payments.

By use of models, Santomero and Seater (1996), Shy and Tarkka (2002) and Prinz (1999) identified conditions under which currency may be substituted with alternative payment. According to the said studies, there is at least a likelihood of internet substitutes for currency to unfold and thrive on a wider scale. This depends on the features of the technology used and that of its potential end-users. Whereas the above studies indicate alternative payments as possible substitute for currencies it does not mention a possibility of these alternative payments being substitute of each other. This study investigates the possibility of non-cash instrument substituting each other.

Malarvizhi and Rajeswari (2012) carried out another study on realization and utilization of mobile banking services in Coimbatore Cite. It sorts to approximate the specification used for selecting m-banking services. Sample selection was done by adoptive purposive sampling

technique between January and February 2010. The study population was in India and Garrett, ranking and simple percentage techniques were applied. The study outcomes indicate that users of m- banking are all educated and they belong to either business or middle class. It concludes with emphasis on why banks must be ready to meet customers' expectations by providing excellent mobile banking experiences. The said study shows how customers are more informed and therefore demand the best from their banks. This study will attempt to find out effect of mobile payment on growth of plastic cards.

Al Jabri and Sohail (2012) examined a number of factors that affect mobile banking adoption using DOI theory. Connivance was used as the sampling technique for data collection of 330 actual users of m-banking. It is important to also note that the majority of the sample size were young respondents aged between 18-25 years. The study population was in Saudi Arabia where factors such as relative advantage, computability and observability were found to have positive effects on adoption. They found out that banking industry in Saudi Arabia would have practical implications should they offer mobile banking services that are compatible with various user requirements, lifestyle, beliefs and past experiences for them to fulfill their customers' expectations. In this study we investigate how mobile payments fulfill its customers' expectations in order for it to perform against its competitors.

A study by Freedman (1999) suggested that e-banking presents the possibility that the entire alternative payment system not under the control of Central Bank may arise. Nowadays, transactions mainly mobile payments bypass the national payment system of Central Bank

altogether. This study investigates the performance of mobile payments vis-à-vis plastic card payments to ascertain the possibility of it bypassing the national system of payment.

Johnson et al. (2012) established that financial service access is most consistently affected by gender and level of education. The study revealed that men are more likely to have M-Pesa than women and are more likely to have bank accounts. Having no education increases the likelihood of not having M-Pesa in comparison to any level of primary education or above. It was also found that having a secondary education or above leads to a higher likelihood of having a bank account; whereas income level was more strongly associated with a higher possibility of using M-Pesa and less for banks. Finally, geographical location was found to influence financial service accessibility with those living away from banks being less likely to have a bank account or use it less frequently. From the above study, it's evident that whereas the use of mobile payments has positive correlation with level of education and income, the researcher did not mention its implications on other non-cash instruments. Even though the research stated that there is likelihood of using M-Pesa more frequent than banks, it did not indicate the effect of such services to the growth of plastic cards.

Aker and Mbiti (2010) carried out a study on evolution of mobile phone coverage and its adoption in sub-Saharan Africa. The study revealed that first adopters of these services were primarily male, young, educated, wealthy and urban population due to high prices of the handsets and services. With the introduction of low priced handsets and top up cards, more people including the elderly, the poor and the rural population owned mobile phones by 2009. The study showed that on average, M-Pesa users are better educated, wealthier, urban and are

already banked. This study shows that mobile payment must be having an implication on other non-cash instruments especially plastic card payments provided by financial institutions because on average most of its users are already banked. This study will try to find out what is the effect of these mobile payments used by the already banked on the growth of plastic cards that they (already banked) were possibly using prior to introduction of these services.

CBK (2010) reported that there had been a speedy growth of mobile money especially M-Pesa in terms of volumes and value of money transferred. By November 2009, M-Pesa users had increased tremendously to about 8.6 million from a mere 52 thousand users in April, 2007. This is considered a substantial growth given that Kenya had a population of about 38 million people and a per capita of approximately USD 486 in 2009. These findings reveal stages of M-Pesa development and its enormous growth. The limitation of this report is that it does not incorporate other forms of mobile payments apart from M-Pesa; it also does not consider other forms of non-cash instruments. This study will further examine growth of mobile payments and it's implication on plastic cards.

Asiabugwa and Munyaki (2013) conducted a study on adaptation of e-commerce by banks in Kenya. Its findings showed that e-commerce positively correlated with performance. Conclusion of their study results was that banks that adopted e-commerce improved their performance as opposed to those that did not. This indicates to us that e-commerce platforms have a positive effect on performance but it does not indicate specific implications of such platforms on other forms of payments. This study will focus on the effect of mobile payment on e - commerce platform using plastic cards.

2.5 Summary of Literature Review

The three theories relating to innovation, new product development and competition have been looked at in details in this chapter. Both TAM and DOI are alike in some constructs and they supplement each other. They both show that Relative advantages and compatibility have significant positive effects on PU. Differentiation strategy, on the other hand, assists in coming up with a strong identity of a product brand in a specific market by introducing different varieties of same basic product under the same brand name into a particular product segment. It creates a competitive advantage that is characterized by valuable features such as innovation, customer care and quality through research and development. With such highly differentiated products a firm is likely to outperform its competitors and earn above average returns.

All the empirical studies mentioned above focus on introduction and growth of either mobile money or mobile banking and its effects on the users. No empirical study has been found in Kenya conducted specifically on the effect of mobile payments on growth of plastic cards. There is a research gap in studies dealing with the relationship between use of mobile payments and plastic card payments. It is therefore important to understand effects of these instruments of payment on future payment trends.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes how the study will be conducted, giving procedures to be involved in the research design, data collection and analysis. It will also explain the data collection techniques to be employed and the instruments to be involved.

3.2 Research Design

A research design is a reasonable and systematic plan for handling a research study. It outlines the objectives of the study, the methodology and techniques to be used for achieving the objective(s) (Mugenda and Mugenda, 2003). This study will adopt a descriptive correlational study design. This is because it establishes whether or not two variables are correlated. That implies that the study purposes to find out whether an increase or decrease in one variable corresponds to an increase or decrease in other variable.

3.3 Data Collection

Data to be collected in this study will be from secondary sources. Secondary quantitative data from CBK and Communication Authority of Kenya websites will be used. This consists of monthly reports on the national payment system and mobile payment system. This study will use census sampling in determining its sample. It is referred to as census sample because data is collected on every member of the population. It is also referred to as a complete enumeration of the population.

The period under review will be from 2013 to 2016. This duration is considered appropriate since there has been a great increase in the usage of mobile payments hence it will be judicious establishing how this has affected the plastic payments.

3.4Data Analysis

This study investigates the effect of m-payments on the growth of plastic card payments in Kenya, that is, whether mobile payments will increase or decrease the growth of plastic card payments. Secondary data from CBK and CA websites will be used. Data on growth of mobile payments, otherwise known as mobile commerce transactions, number of mobile telephony subscribers, amount of demand deposits in banks, number of PoS machines in Kenya will be collected. The study will use both descriptive and inferential statistics in analysis the data.

The data collected will be sorted, collocated before capturing it in SPSS for analysis. Descriptive statistics, which include: frequencies, percentages and mean for each variable will be calculated and tabulated using tables, charts and graphs.

3.4.1 Analytical Model

To make regression analysis possible, the study will apply the following analytical model

The general model is as follows:

$$Y=f(x_1, x_2, x_3, x_{4,} x_5)$$

While, the specific model is as follows:

$$PC=\beta_0 + \beta_1 MP + \beta_2 PoS + \beta_3 MTS + \beta_4 DD + \varepsilon$$

Where:

PC= the cumulative monthly growth in no. of plastic cards payments

MP= the cumulative monthly growth in the no. of mobile payments (mobile commerce transactions)

PoS= the cumulative monthly growth in the no. PoS machines in Kenya

MTS= the cumulative monthly growth in no. of mobile telephony subscribers

DD= the cumulative monthly growth of demand deposits in banks

ε= the error term

This model is derived directly from the literature review on the determinants of growth in the number of plastic card payments whereby these determinants are used in the model as control variables and are modified from Goh et al., (2013). Under this model, the dependent variable is growth in the number of plastic card payments (PC) which is measured using the monthly growth in transaction volumes of plastic card payments at PoS. It will be computed as follows:

$$PC = \frac{\text{No. of Plastic card payments at PoS in month t} - \text{No. of Plastic card payments at PoS in the month prior to t}}{\text{No. of Plastic card payments at PoS in the month prior to t}}$$

The independent variable is the growth in the number of mobile payments (MP) measured as the growth in transaction volumes of mobile payments in Kenya. The control variables are the growth of PoS, MTS and DD measured as the growth in the number of Point of Sales machines

denoted as (PoS) in the entire Kenyan economy, number of mobile telephony subscribers (MTS) in Kenya and amount of demand deposits in Kenyan banks (DD).

These variables will be measured as follows:

$$\text{MP} = \frac{\text{No. of mobile payments inmonth t} - \text{No. of mobile payment in month prior to t}}{\text{No. of mobile payment in the month prior to t}}$$

$$\text{PoS} = \frac{\text{No. of PoS machines in month t} - \text{No. of PoS machines in month prior to t}}{\text{No. of PoS machines in the month prior to t}}$$

$$\text{MTS} = \frac{\text{No. of MT customers in month t} - \text{No. of MT customers in month prior to t}}{\text{No. of MT customers in the month prior to t}}$$

$$\text{DD} = \frac{\text{Amount of deposit on demand in month t} - \text{Amount of deposit on demand in month prior to t}}{\text{Amount od deposit on demand in the month prior to t}}$$

The above mentioned growth will then be cumulated over the period under study before being analyzed.

3.4.2 Test of Significance

In testing the relationship between the variables, inferential tests will be applied. In evaluating multicollinearity-the extent of correlation among various independent variables of the linear regression model, tolerance value and variable inflation factor (VIF) will be used.

Exploration of relationship between two variables will be done using Pearson's correlation coefficient. Examination of the relationship between mobile payments and plastic card payments

will be done using Pearson's product-moment correlation coefficient as a measure of association. Correlation coefficient is the measure of the strength of linear association between two variables.

The correlation is between -1.0 and +1.0. For instance, if the correlation between mobile payments and plastic cards usage is positive it means that when usage of mobile payments increases the plastic card usage goes up too.

The significance will be tested at 90% confidence level. This will be established by t-statistics and f-statistics.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

Chapter four shows the analysis of findings of the study on the effect of mobile payments on the growth of plastic payments of financial sector in Kenya. The variables involved as well as the estimated analytical model was analyzed. The data covered a period of three years from 2014 to 2016 and as analyzed using the varied statistical instruments including growth rates, person correlations and regression analysis.

4.2 Descriptive Statistics

Table 4.1 below indicates the descriptive statistics of all the variables considered in this study: growth in the number of plastic card payments (PC), growth in the number of plastic card payments (PC), growth in the number of Point of Sales machines denoted as (PoS) in the entire Kenyan economy, number of mobile telephony subscribers (MTS) in Kenya and amount of demand deposits in Kenyan banks (DD). It shows the number of observations for all variables, their minimum, maximum, means, standard deviation, skewness and kurtosis.

From Table 4.1, the growth in the number of plastic card payments for the period under the study recorded a mean of -30.6076 and a standard deviation of 17.24830. This implies that, on average, the number of payments effected using plastic cards went down by 30.61%. That is, for every 100 plastic card payments transacted in the preceding period 30.61 of those payments were not transacted in the current month. However, the growth went as high as 7.92% and as low as -52.31%.

On contrary Mobile payments recorded a relatively steady and rapid positive growth during the period under study. On average, the growth rate of mobile payments during the period under

study was 42.9470% with both the maximum and minimum growth rates being 87.45 % and -2.01 % respectively. Implying, for every 100 Mobile payments transacted in the preceding period 42.91 additional mobile payments were transacted in the current month.

Other controlling variables such as PoS, MTS and DD had mean values of 8.5539, 19.8124 and 1.1666 respectively. This means that on average all the dependent variables had positive growth during the period under study. It is also worth noting that the only variable that had no negative growth as MTS. It had a steady and continuous positive growth throughout the period under review.

	N	Minimum	Maximum	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
PC	42	-52.31	7.92	-30.6076	2.66147	17.24830	.442	.365	-1.194	.717
MP	42	-2.01	87.45	42.9470	3.94093	25.54015	.100	.365	-.836	.717
PoS	42	-11.39	41.43	8.5539	2.11936	13.73501	.783	.365	.016	.717
MTS	42	.00	38.94	19.8124	1.42771	9.25259	.215	.365	.229	.717
DD	42	-3.38	5.82	1.1666	.30506	1.97704	.109	.365	-.067	.717
Valid N (listwise)	42									

Table4.1 Descriptive Statistics

4.2.1 Cumulative Growth of Mobile Payments

Figure 4.1 below indicates a steady and rapid growth in the number of mobile payments during the study period. The growth rate increased from the year 2013 to 2016. This depicts mobile telephony users increasingly used mobile money to pay for goods and services. The number of mobile payment increased from 53.4068 million transactions in January 2013 to a whopping 121.805 million transactions in June 2016. This indicates a steady and huge growth attributable to innovation, change in technology, creativity, increased awareness and changes in customers' preferences (Woharem, 2006). Cumulatively, mobile payments increased from 12% in February 2013 to 87.45% in June 2016

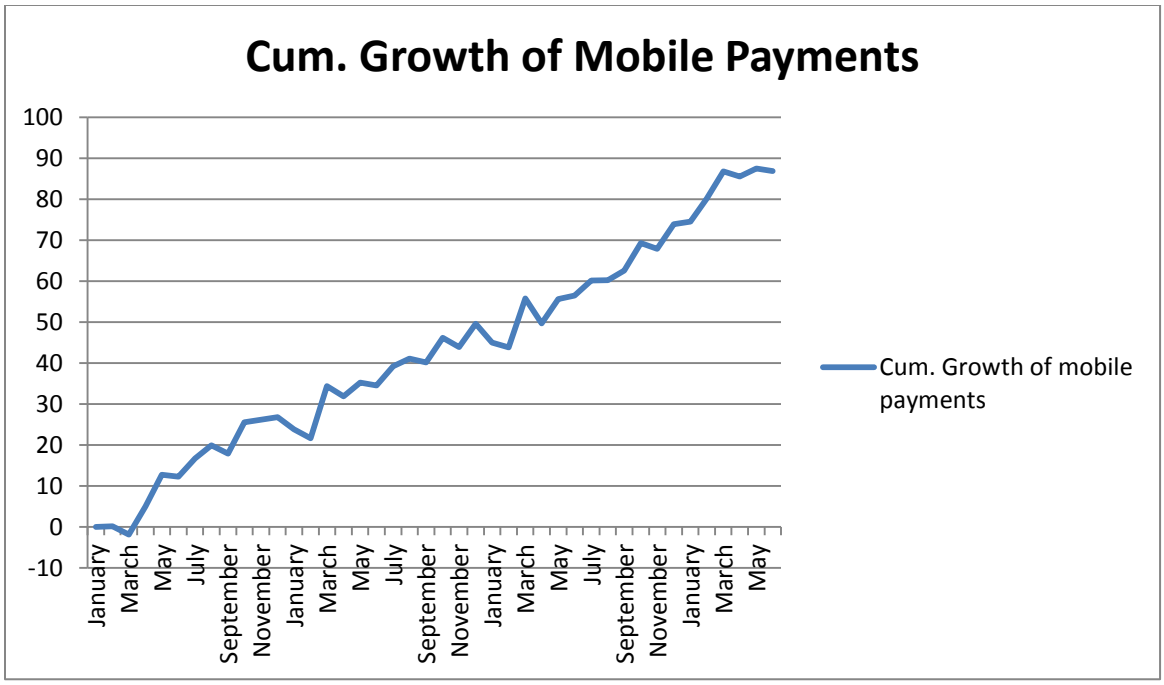

Figure 4.1 Cumulative Growths of Mobile Payments

4.2.2 Cumulative Growth of Plastic Card Payment

The figure 4.2 below indicates that unlike mobile payments, the growth of plastic cards for the period under study was on a declining trend. For instance in January 2013, plastic cards registered 31,409,255 transactions followed by 33,897,940 transactions in February of the same year. This represented a 7.9% increase; same cannot be told of succeeding periods which were generally on a decline. For instance, by February 2014 transactions had dropped to 24,438,228 while in June 2016, transactions had further dropped to 17,829,172. Generally, a steady decline in the growth of plastic cards payments were reported in during the study period. Cumulatively, plastic card transaction had declined to 52.31%

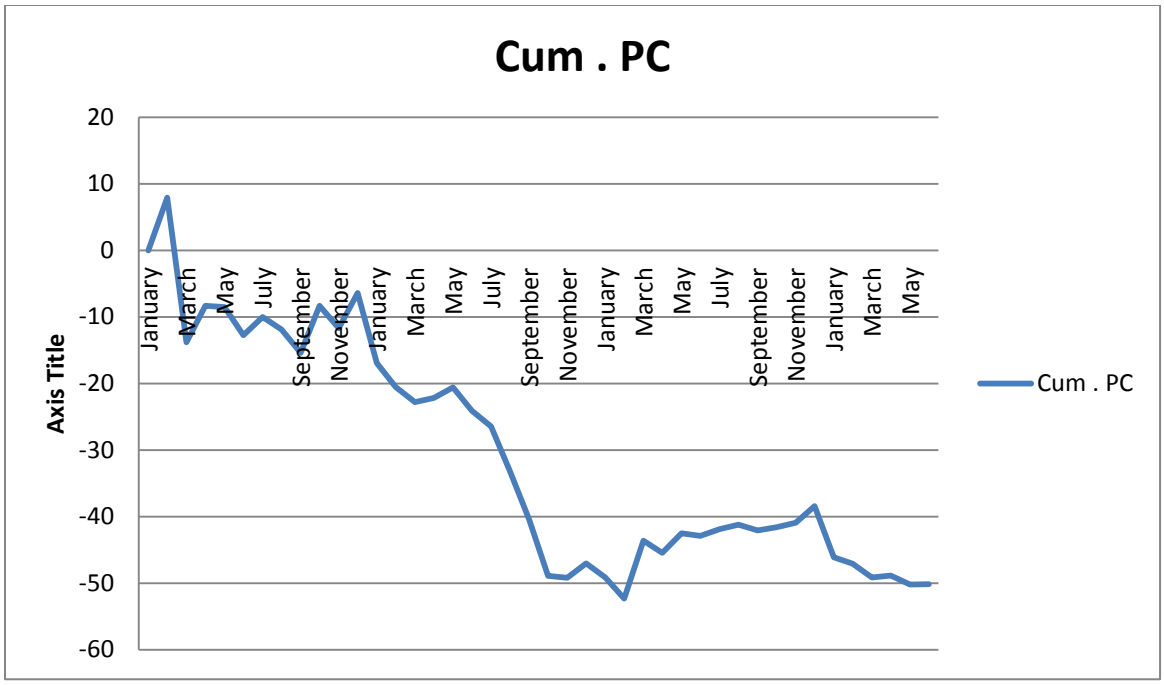

Figure 4.2 Cumulative Plastic Card Payments

4.2.3 Growth of Mobile Payments

Figure 4.3 below indicates that the growth of mobile payments and plastic cards payments were inversely related. This means that because of the perceived usefulness of mobile payment due its flexibility, reliability, efficiency and availability (Davis, 1989) led to continuous brand switching from plastic card payment channels to mobile payment. During the study period, the growth of mobile payments rose from 0% to 86.8% whereas the growth of plastic card payments declined from 0% to -50.17%.

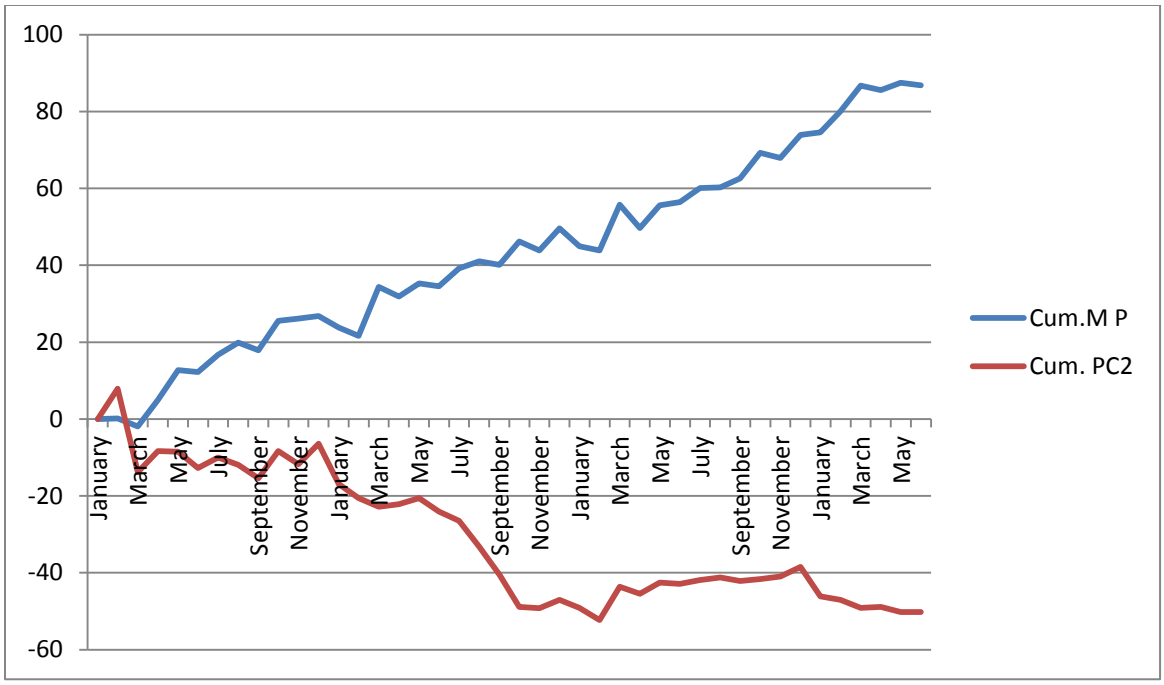

Figure 4.3 Cumulative Growth of Mobile Payments and Plastic Card

4.3 Correlation Analysis

The Pearson product-moment correlation coefficient is defined as a measure of the strength of a linear association between two variables. The Pearson correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no relationship between the variables. A value greater than 0 shows a positive relationship, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 shows a negative relationship, that is, as the value of one variable increases the value of the other variable decreases The study sought to establish the relationship between dependent variable and the explanatory variables. Pearson Correlation analysis was used to achieve this end at 99% confidence levels.

		PC	MP	PoS	MTS	DD
PC	Pearson Correlation	1	-.865**	-.268	-.756**	-.122
	Sig. (2-tailed)		.000	.086	.000	.440
	N	42	42	42	42	42
MP	Pearson Correlation	-.865**	1	.616**	.944**	.043
	Sig. (2-tailed)	.000		.000	.000	.786
	N	42	42	42	42	42
PoS	Pearson Correlation	-.268	.616**	1	.704**	.073
	Sig. (2-tailed)	.086	.000		.000	.644
	N	42	42	42	42	42
MTS	Pearson Correlation	-.756**	.944**	.704**	1	.070
	Sig. (2-tailed)	.000	.000	.000		.657
	N	42	42	42	42	42
DD	Pearson Correlation	-.122	.043	.073	.070	1
	Sig. (2-tailed)	.440	.786	.644	.657	
	N	42	42	42	42	42

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

Table 4.2 Correlations

The table 4.2 above shows that growth of plastic card payment has a strong negative correlation with the growth of mobile payments (R= -0.865). This means that an increase in the usage of mobile payment options will reduce the usage of plastic card payments. The outcome also

indicates moderate and negative relationship between the growth of plastic card payments and the growth in the number of Point of Sale machines (R= -0.268). MTS is also negatively related with the growth of plastic payments. This portrays that an increase in the number of mobile telephone subscribers will reduce the usage of plastic cards. Demand Deposits brought out a weak and a negative relationship (R= 0.122) with growth of plastic cards.

4.4 Regression Analysis

In this study, regression analysis was used to establish the determinant of coefficient, analysis of variance (ANOVA) and generate the regression coefficient. A test of significance was also carried out to determine if the variables are significant in explaining the growth of plastic card payments under study.

4.4.1 Model Summary

Determinant Coefficients, (R2) is often used to establish the strength of the association between the independent and dependent variables. This study's R2 as found to be 0.748. This implies that 74.4 % of the variation in the growth of plastic card payments is attributable to the changes in the explanatory variables.

The Durbin-Watson test statistic tests the null hypothesis that the residuals from an ordinary least-squares regression are not auto correlated. The Durbin-Watson statistic ranges in value from 0 to 4. A value closer to 2 illustrates non-autocorrelation; a value towards 0 indicates positive autocorrelation while a value toward 4 indicates negative autocorrelation. Given that Durbin-Watson test statistic value of 0.588 was close to 0, then it can be concluded that there was a positive autocorrelation among the model residuals.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.865[a]	.748	.742	8.76936	.588

a. Predictors: (Constant), MP

b. Dependent Variable: PC

Table 4.3 Model Summary

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

In this chapter, conclusions are drawn from the analytical findings of the previous chapter and recommendations made to inform any future policy aimed at predicting future payment trends in Kenya. The chapter also highlights the limitations that were encountered with suggestions for further research.

5.2 Summary of Findings and Discussion

The key objective of the study was to establish the effects of mobile payment on the growth of plastic card payments of financial sector in Kenya. A census study of the financial sector in Kenya from 2013 to 2016 showed that mobile payment has negative effect on the growth of plastic payments in Kenya. In chapter four, result of data analysis illustrated that mobile payments has strong-negative relationship with growth of plastic card payments with determinant of coefficient of 0.748 (R=0.748). That is, an increase in the usage of mobile payments solutions will lead to a reduction in the growth of plastic cards payments. There was also an indication from the regression result carried out in chapter four that mobile payment is statistically significant in causing the changes in growth of plastic cards.

The finding is also consistent with Aker and Mbiti (2010) who revealed that first adopters of these services were primarily male, young, educated, wealthy and urban population due to high prices of the handsets and services. With the introduction of low priced handsets and top up cards, more people including the elderly, the poor and the rural population owned mobile phones

by 2009. The adaptation of mobile technology led to more people abandoning other payment solutions.

This study is also consistent with empirical study carried out by Al Jabri and Sohail (2012) which examined a number of factors that affect mobile banking adoption using DOI theory. Factors such as relative advantage, computability, flexibility and observability must have had influence on the growth of mobile payment solutions. This enabled many Kenyans who were previously unbanked and therefore unable to acquire plastic cards to now register on mobile money platforms such as M-Pesa and Airtel money and be able to transact using their phones.

5.4 Limitation of the Study

The study was conducted spanning from the year 2013 to 2016, that is, a sample size of the time of four years. However, in statistical analysis involving regression requires that the time period should be at least 30 years. That means that some variables which are significant might not have been significant if a large sample size was selected.

5.5 Recommendations

5.5.1 Policy Recommendations

Since mobile payments decrease the growth of the plastic card, the study recommends that financial sector should revise its policies to include involvement of telephone service providers during the introduction and development of new alternative banking channels. This will enable financial sector players remain competitive. Financial sector players such as commercial banks, micro-finance bank, insurance companies and SACCOs should collaborate with mobile service providers in coming up with innovative mobile money applications. This can be done through research and development.

Financial institution should also collaborate with financial sector regulators such as CBK in coming up with new policies and/or regulations that will ensure that the new innovative products are sufficiently regulated and secured. This will ensure that mobile payments consumers are fully protected. By so doing, confidence in these forms of payment will be enhanced. Many consumers will be more confortable transacting using such services.

5.5.2 Suggestions for Further Studies

Further studies should be conducted using quarterly data to improve on the sample size of the data. Data for a research of this nature should be sourced from more than two sources. This is because not all mobile money transactions are payments transact. Some of mobile money transactions are money transfers.

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APPENDICES

Raw Secondary Data

Year	Month	PC	MP (Millions)	No. of POS Machines	MTS (Millions)	DD (Millions)
2013	January	31,409,255.00	53.4068	18,422.00	21.4181	544,198
2013	February	33,897,940.00	53.4683	18,250.00	21.8024	550,495
2013	March	26,526,876.00	52.3949	18,350.00	22.3292	554,623
2013	April	27,978,836.00	55.9993	18,576.00	23.0185	586,878
2013	May	27,930,650.00	60.34	18,796.00	23.47	589,573
2013	June	26,740,729.00	60.03	19,204.00	23.75	584,779
2013	July	27,482,178.00	62.71	19,638.00	24.27	580,067
2013	August	26,958,212.00	64.71	19,898.00	23.87	582,206
2013	September	26,023,739.00	63.43	20,046.00	23.97	605,731
2013	October	27,860,230.00	68.27	20,569.00	24.43	609,619
2013	November	26,915,351.00	68.7	20,470.00	24.9	602,251
2013	December	28,343,121.00	69.1378	21,089.00	25.3263	594,012
2014	January	25,364,825.00	67.0519	21,436.00	25.7568	608,652
2014	February	24,438,228.00	65.5934	21,647.00	26.1164	626,142
2014	March	23,889,412.00	73.9817	21,868.00	26.208	637,428
2014	April	24,038,128.00	72.0955	17,340.00	26.1399	652,902
2014	May	24,421,413.00	74.5472	17,315.00	25.8152	656,850
2014	June		74.0288		25.9284	685,506

		23,571,142.00		17,395.00		
2014	July	23,008,634.00	77.4651	16,201.00	26.2265	662,354
2014	August	21,462,088.00	78.8987	15,963.00	26.333	663,587
2014	September	19,899,156.00	78.1748	16,143.00	26.2995	669,722
2014	October	18,219,109.00	82.8925	16,627.00	25.996	689,682
2014	November	18,169,236.00	80.9984	17,015.00	24.9465	705,081
2014	December	18,561,022.00	85.6071	17,511.00	25.2492	707,513
2015	January	18,170,295.00	81.6534	17,487.00	25.3972	703,518
2015	February	17,593,786.00	80.7405	17,345.00	25.4556	721,001
2015	March	19,124,508.00	90.3477	17,294.00	25.6902	744,592
2015	April	18,771,411.00	84.9056	17,326.00	26.1392	753,485
2015	May	19,318,393.00	89.9024	18,711.00	26.4645	756,579
2015	June	19,244,454.00	90.6686	19,259.00	26.5028	775,264
2015	July	19,447,141.00	93.9985	19,928.00	26.7382	768,091
2015	August	19,573,640.00	94.12	19,621.00	27.0497	776,056
2015	September	19,401,233.00	96.32	20,892.00	27.312	756,141
2015	October	19,493,455.00	102.75	21,198.00	27.537	784,410
2015	November	19,628,721.00	101.33	21,897.00	28.064	781,059
2015	December	20,115,618.00	107.44	22,230.00	28.6447	771,719
2016	January	18,576,099.00	108.13	22,596.00	29.098	808,201
2016	February	18,395,690.00	114.136	23,095.00	29.489	812,121
2016	March	18,012,477.00	121.716	24,664.00	30.696	838,999
2016	April	18,068,280.00	120.23	25,392.00	31.438	852,166
2016	May	17,821,950.00	122.55	26,553.00	31.296	859,512
2016	June	17,829,172.00	121.805	26,742.00	31.386	878,857