# THE EFFECT OF NATIONAL PAYMENT SYSTEM ON ECONOMIC GROWTH IN KENYA

BY

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NOVEMBER, 2017

# **DECLARATION**

I declare that this is my original work and has not been presented for a degree in any other university.

Sign.....

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

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# **DEDICATION**

I dedicate this thesis to the memories of my late mum Faith Waigwe Kamau. Her unlimited belief in me was the motivating and encouraging factor in accomplishing this thesis. I also dedicate this thesis to my immediate family namely my dad Kenneth Kamau, my brothers and sisters whose extensive support and encouragement over the years has contributed to the fruition of this study. I lastly dedicate this study to my relatives, Prof. Joseph Kitonyi, Prof Grace Kitonyi and Prof. Karanja for their immeasurable support and encouragement over the years. May God always bless you.

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# ABSTRACT

The study investigated the effect of national payment systems on economic growth in Kenya between the 1<sup>st</sup> quarter of 2009 to the 2<sup>nd</sup> quarter of 2017. Economic growth is defined as the ability of a country to produce goods and services in a given period of time as compared to the previous period. The dependent variable in the study was GDP while independent variables included four payment systems mainly real time gross settlement, electronic fund transfer and cheques, domestic foreign currency cheques and lastly mobile money payment system. The study used secondary data for a period of 34 quarters with the research study employed being case study research design. Microsoft excel 2016 and XLStat add in was used to analyze the research variables with the analysis done being descriptive analysis, correlation analysis and multiple regression analysis. The multiple regression analysis indicated that 94.2% of the variability in the study was explained by the four independent variables. This implied that 94.2% of the variations in gross domestic product were explained by the four predictor variables namely RTGS, EFT & Cheque, DFCC and mobile money with only 5.8% variations being explained by other variables not covered in the study. The study also indicated that only mobile money had a positive effect on economic growth while the three other predictors variables had a negative effect on economic growth.

# LIST OF ABBREVIATIONS

ATM	Automated Teller Machine
BIS	Bank of International Settlements
CBK	Central Bank of Kenya
COMESA	Common Market for Eastern and Southern Africa
DFCC	Domestic Foreign Currency Cheque
DW	Durbin- Watson
EAPS	East African Payment System
EFT	Electronic Fund Transfer
GDP	Gross Domestic Product
INF	Inflation
KEPSS	Kenya Electronic Payment Settlement System
Kes.	Kenyan Shilling
KNBS	Kenya National Bureau of Statistics
Mn	Million
POS	Point of Sale
REPSS	Regional Payment and Settlement System
RTGS	Real Time Gross Settlements
VIF	Variance Inflation Factor

WB World Bank

## **CHAPTER ONE: INTRODUCTION**

#### **1.1Background of the study**

In this 21<sup>st</sup> century national payment systems have proved to be a core stimulator and intermediary of economic growth in any given country. Adewole (2015) postulated that payment systems tend to represent a tripod stand upon which effective operation of Central Bank functions such as supervision, regulation and monetary control rests upon. Central Bank of Kenya refers to a payment system as an arrangement or system which enables payments to be effected between a payer and a payee, or that which would facilitate the circulation of money. Kenya is among the countries that have largely adopted use of payment systems in its bid to deepen financial inclusivity in the country. This has tremendously changed the way both national and county governments collect their revenues and also had an impact on how customers pay for their goods and services which has resulted in an increase in the velocity of circulation of money within the economy.

Economic growth is defined as the ability of a country to produce goods and services in a given period of time as compared to the previous period. It is measured in real terms which is adjusted for inflation and in nominal terms which is not adjusted for inflation. KNBS (2017) has it that for the first quarter of 2017 Kenya's GDP grew by 4.7% when compared to a similar period in 2016. This is a substantial drop when compared to a high of 6.1%, 5.2%, 5.8%, 5.3% for the same quarter in 2013, 2014, 2015 and 2016 respectively.

Kenya is among the list of countries which is on course to attain a cashless economy in the long term due to its high receptivity of the various payment systems established by the CBK. It piggybacks on the notion that the foundation of a nation's financial system is mainly dependent on establishment of a strong financial infrastructure which comprises of financial institutions, the adopted technologies, financial information and well set standards, rules and procedures.

### **1.1.1 National Payment Systems**

With the inception of the paradigm shift to cashless economy in most of the developed economies there was a need for any given nation to adopt automation of its payment systems. This has been noted to increase convenience and reduce social ills such as corruption which decreases frictions in the economy. This in turn spurs economic growth.

Kumar V. & Raheja G. (2012) denoted that payment system is rated based on how well it can integrate with various types of ecommerce platforms which includes business to business, business to consumer, consumer to consumer, consumer to business and lastly person to government. Central Bank of Kenya (2017) indicates that Kenya has classified its payment systems into two categories which include large value payment systems and low value payment system with the classification being based on values transacted and the volumes processed.

Large value payment system in Kenya has KEPSS which is a RTGS system that clears and settles transactions on a real time and continuous basis. Payments systems integrated into KEPSS include EAPS and REPSS which aid in cross border payments within East Africa and COMESA respectively. Large value payment system is the most important component in national payment system as it takes a lion share of net settlements which in case of any disturbance in the financial sector may lead to national financial crisis. As at June 2017 KEPSS had transacted 371,661 valued at Kes. 2.368 trillion.

Low value payment system in Kenya includes payment systems such as Nairobi Automated Clearing House which clears cheques and EFT in Kenya. Nairobi Automated Clearing House in a bid to facilitate higher velocity in circulation of money, the clearing cycle was reduced from a period of three working days to two working days in 2011 and later to one working day from 2013. Another type of Low value payment system is the mobile money transfer system. This was started in 2007 and has grown rapidly over the ten years it was started. It has aided accessibility of financial services while also revolutionizing the banking sector from a traditional brick and mortar to digital banks accessible via mobile phones. This has thereby revolutionized ways of doing business in providing easy accessibility of financial services. National government through national treasury and some county governments have implemented various sub-systems which piggy backs on the success of mobile payment system. These include sub-systems such as the e-Citizen platform and e-Jiji pay.

### **1.1.2 Economic Growth in Kenya**

Human resource, natural resources, technology, capital and social and political factors are some of the variables that determine the level of economic growth in a country. In the years preceding 2002, the Kenya's economy was faced with numerous bottlenecks and challenges which made it to be well below its potential. Following the establishment of Economic Recovery Strategy 2003- 2007 the Kenyan economy slowly started improving. This was reflected by the steady growth of Kenya's economy from 0.5% in 2002 to 2.9%,

5.1%, 5.9%, 6.3% and 7.0% for the years 2003, 2004, 2005, 2006 and 2007 respectively as reported by KNBS (2017).

Post-election violence experienced in Kenya in the year 2007/8 dampened the country's economic growth rate to grow at rate of only 1.6% in 2008 (as cited in Kenya Economic Report,2010) when compared to the previous year. Following the implementation of electoral reforms, the country was able to revert back to a positive growth of 2.6% and 5.3% between the years 2009 and 2010 respectively.

### **1.1.3** National Payment System and Economic Growth in Kenya

Economic growth is one of the major macroeconomic goals sought after by policy formulators. Given that national payment system tend to act as a conduit in stimulating the economic growth this will lead to achievement of the estimated economic growth rate which is estimated to be at 6.1% as per the Kenya Economic Report (2017). The report also shows that private consumption in 2016 has contributed 79.8% to the GDP of Kenya. With this in mind it therefore indicates that consumption is an essential factor in growth of the economy. Effective and efficient integration and harmonization of payments systems to capture all players in a market will lead to increased trade which will in turn lead to increased consumption of goods and services. This will be beneficial to the economy as it will lead to an increase in GDP.

Mobile money payment has gradually increased from Kes. 643,905 in March 2007 to Kes.297.437 billion in April 2017 while RTGS has increased from 10,575 transactions worth Kes. 624.525billion in January 2006 to 396,353 transactions worth Kes. 2.379

trillion in April 2017 as reported by Central Bank of Kenya (2017). This shows a significant increase in the amount transacted for the highlighted periods. Holding all other factors constant, given that with a significant change in value of transactions, the change may not necessarily move *pari passu* with the country's economic growth rate.

## 1.1.4 Central Bank of Kenya

Central Bank of Kenya was founded in the year 1966. Its main mandate is to formulate and also implement monetary policies that will promote price stability Central bank (2017). CBK in its mandate is gazetted under The National Payment System Act 2011 to perform all functions bestowed on it such as designating a payment system. CBK wholly owns KEPSS which was implemented in 2005 and authorized payment service providers for the establishment of mobile money transfer services from the year 2007.

Through formulation of monetary policy CBK is thus able to control variables such as interest rates and inflation rates in Kenya which affects the real GDP of the country. It is also able to encourage savings in the economy. CBK has been instrumental in ensuring that the cost of credit is within the prescribed limit following the capping of interest rates in Kenya. CBK has also fostered an enabling environment which has led to increased proliferation of diverse payment systems which have stimulated economic growth in Kenya. This is attributed to the increased money supply within the Kenyan economy which is one of the core functions of CBK. Central Bank of Kenya thus plays a critical role in both regulating payment systems and in promotion of economic growth through formulation and implementation of monetary policies.

#### **1.2 Research Problem**

Developed economies have significantly adopted use of electronic payment systems which is attributed to the revampment of their payment systems. Engberg (1963) notes that a financial structure tends to greatly facilitate high rate of economic growth. Muiruri (2013) on the other hand notes that with an efficient national payment system it largely reduces the cost of exchange of goods and services. Integration of various payment systems is thus vital in ensuring that efficiency is achieved and systemic risks such as liquidity risk, operational risk and credit risk are minimized. Given that private consumption in Kenya takes up greater share of the GDP this therefore results in the necessity of a payment system to alleviate friction in the economy and also to increase productivity.

Numerous studies have focused on financial development and economic growth. In this decade through the growth in technology, it has led to a shift from use of traditional financial services to digital financial services. This has led to efficient allocation of financial resources. Mobilization of savings has also increased, catapulted by the digitization of the financial services. Efficient allocation of financial resources also stimulates consumption of goods and services which spurs also growth of the economy. Central Bank of Kenya (2017) showed that since inception of the various payment systems there has been an increase in volume of transactions over the years. RTGS transactions have increased from 8,999 transactions in January 2005 valued at Kes.496.25 billion to 371,661 transactions valued at Kes.2.368 trillion in June 2017. Mobile money transactions have also substantially increased from 21,714 transactions worth Kes.

0.06439 billion in March 2007 to 150.293 million transactions worth Kes.299.789 billion as at June 2007. The economy has also grown within the same period from an economic growth rate of 2.9% in 2003 to 5.1%, 5.9%, 6.3% and 7.0% for the years, 2004, 2005, 2006 and 2007 respectively as indicated by KNBS (2017). This is due to high receptivity of payment systems by Kenyans over time. The economy has also grown despite its cyclical trend attributed to exogenous factors such as famine and political instability.

Various studies done have also concentrated on the influence of macro-economic variables such as public debt, foreign direct investments, inflation among others and their influence on economic growth. In regards to the increased receptivity of various payment system it is important to identify whether the value of transactions in national payment system is in tandem with economic growth rate in the country. This will enable a better understanding of whether the increased proliferation of payment systems in Kenya leads to growth of the economy. It is this research gap that the current study attempts to study by answering the research question: What is the effect of national payment system on economic growth in Kenya?

## **1.3 Objective of the Study**

The objective of this study was to analyze the effect of national payment system to the economic growth in Kenya.

#### **1.4 Value of the study**

The research will give guidance to Monetary and Fiscal policy formulators in Kenya in their role of policy making by elucidating how effective national payment system is to the growth of the country's economy. This will assist in the formulation of prudent policies that will safeguard Kenya's economy in regards to regulation of payment systems.

It will prove valuable to academicians and future researchers by explaining how Kenya's national payment system is pivotal in the paradigm shift of the country's economy to a cashless economy.

The research will also be beneficial to various stakeholders including but not limited to commercial banks, microfinance banks and mobile money service providers in leveraging on the exponential growth in digital technology. This will help them to minimize their operation costs and also aid in maximizing their potential earnings.

# CHAPTER TWO LITERATURE REVIEW

## **2.1 Introduction**

This chapter contains the theoretical framework used in the study and reviews various previous studies done on the effects of national payment systems on economic growth. It contains the theoretical review, determinants of economic growth, empirical review, conceptual framework and summary of literature review.

## **2.2 Theoretical Framework**

This presents review of the relevant theories expounds on the correlation between national payment systems and economic growth. The theories reviewed are; Financeled growth hypothesis, Growth-led finance hypothesis, feedback hypothesis and Endogenous growth model.

#### 2.2.1 Finance- led Growth Hypothesis

It avers the supply-leading correlation between financial development and economic growth (Patrick ,1966). It argues that with the development of the financial sector it will act as a driver in the real sector hence leading to the growth of the economy as it creates a conducive environment for growth. It further argues that with existence of a strong financial sector this would enable efficient allocation of financial resources over time which will in turn lead the other sectors of the economy to also grow. Bagehot (1873) showed that it played a crucial role in igniting the industrialization in England through facilitating mobilization of capital for immense works. This also

supported by Ohwofasa & Aiyedogbon (2013) who posed that an efficient financial sector facilitates to promote an efficient allocation of resources.

Dernirguc-Kunt & Levine (2008) states that friction in the market leads to emergence of financial contracts, intermediaries and markets which influence economic growth. Through a theoretical review they found strong evidence that financial development is important for economic growth. They argue that it is important for policymakers to prioritize policies targeting financial sector and to focus attention to financial development as a means for promoting growth. The main functions of a financial sector include mobilization of savings, easing the trade and exchange of goods and services, managing financial risk while promoting trade and lastly provide financial information.

The various payment systems since their inception have undergone various modification and update to enable them to be as efficient and effective as possible through increased money supply and circulation of money. This has enabled Kenyan economy to also grow at the same time holding all other factors constant. Central Bank of Kenya was able to create an enabling financial environment with a strong national payment system which has also enabled growth of Kenya's economy.

## 2.2.2 Growth-led Finance Hypothesis

This hypothesis hovers on demand- following response in the real sector of the economy. Robinson (1952) argues that where enterprise leads, finance will also follow. She argues against the finance led growth hypothesis. In her argument she

states that the relationship is unidirectional starting from growth to finance. She also states that a high rate of economic growth leads to an increase in demand in the economy. Presence of a strong and robust financial sector which is well developed should be able to automatically react to the change in demand exhibited in an economy. This view also shows that with emergence of new opportunities that may require financing, the market will ideally develop appropriate markets and financial institutions to finance the arising opportunities.

Choong, Yusop, Law and Sen (2004) argued that this hypothesis shows a demand following relationship between financial development and economic development. The hypothesis also states that with growth in the economy this will create demand for certain financial instruments and arrangements that will lead financial markets to efficiently and effectively respond to such demands.

With the launch of Kenya's Economic Recovery Strategy in 2003, the economy grew rapidly from an economic growth rate of 0.5% in 2002 to 2.9% and 5.1% in 2003 and 2004 respectively. This positive economic growth can be seen as one of the drivers that led to launch of payment systems such as mobile money transfer service which was launched in 2007. This has led the CBK to continuously regulate the various payment systems.

#### **2.2.3 Feedback Hypothesis**

This hypothesis is also known as bidirectional causality view. It suggests there exists a bi-directional causal correlation between financial development and economic growth. Schumpeter (1912) asserts that a country with a well-developed financial system could lead to acceleration of economic expansion through various technological changes, product and services innovation. This will thereby lead to high demand for financial arrangements and services. Reaction by financial institutions to those demands will lead to stimulation of higher economic performance brought about by the changes effected by those financial institutions. The hypothesis tends to explain that financial development and economic growth are positively interdependent and their relationship could lead to bidirectional causality.

Bidirectional hypothesis has been proved in various studies such as in the works of Luintel and Khan (1999). According to Schumpeter (1912), an economy with a wellendowed financial system could promote high economic growth through both technological innovation and product and service development. The conclusion drawn from Al Yousif (2002), after examining 30 developing countries is that financial development and economic growth are mutually causal where the causality is bidirectional. CBK has continued to encourage further use of technological innovation that will lead to secure and efficient financial transactions that can help in growth of Kenya's economy. This has led to a robust national payment system which has stimulated growth of the Kenyan economy.

## 2.2.4 Endogenous Growth Theory

This theory was developed by Harrod in 1939 and later by Domar in 1946. It distinguishes itself from neoclassical growth. Endogenous growth theory emphasizes that economic growth is based on endogenous outcome in the economy and not on

external forces. Endogenous growth is defined as a long-run economic growth rate determined by forces that are internal to the economy especially forces that tend to create technological knowledge. It differs with neoclassical growth theory which argues that the rate of technological progress is guided by scientific process which is independent and separate from economic forces.

Endogenous theory has passed through various versions which include:

## 2.2.4.1 AK Theory

This theory was first developed by Frankel (1962) who argued that the aggregate production function can depict an increasing or constant marginal productivity of capital. It lumps physical capital and human capital together. In this theory long-run growth rate in an economy depends on its saving rate. It shows that when firms accumulate capital some of it will be intellectual capital which can be used to develop technological progress which will negate diminishing of the marginal product of capital.

In the case where MPK is constant

#### Y=AK

Where Y is the aggregate output, A is a constant and K is the aggregate stock of capital.

## 2.2.4.2 Innovation Based Theory

This theory differs with AK theory with the only distinction being that it recognizes intellectual capital as being different from physical and human capital. Intellectual capital grows through increase in innovations. Physical capital grows through savings while human capital grows through continuous schooling.

CBK has encouraged use of technological innovation in the banking sector which has aided the increase in intellectual capital. This is through digitization of various banking operations which has led easier accessibility of financial resources. CBK has also encouraged savings following the Banking (Amendment) Act 2016 which capped lending interest rates and increased deposit interest rate in Kenya.

## 2.3 Determinants of Economic Growth

A number of studies have investigated on the various key factors that determine economic growth. Key factors that are believed to play a part in the overall performance of an economy are as follows:

#### 2.3.1 Investment

According to the neo classical and endogenous models, investment is a key driver of economic growth. According to Barro (1996) the rate of saving is endogenous and is equal to the ratio of investment to output as per the neoclassical growth model for a closed economy. The growth rate of GDP is increased by a high level of savings which in turn increases the levels of output. Over the years there has been a growing interest in investigating about the correlation between investment and economic growth attributed to by the level of importance attached to these theories. Despite all these, no conclusive findings have been established Petrakos et al. (2007).

#### 2.3.2 Macro-economic Conditions

According to Fischer (1993), they are not key determinants of economic growth. Reduction in the levels of uncertainty is facilitated by availability of a macro environment that is stable and has a high ability of facilitating growth. Besides, a negative impact on growth is faced by unstable macro-economic environments which lower the pace of economic growth thus lowering the productivity levels. Inflation, fiscal policy, budget deficits and tax burdens are a key macro-economic factor which affects the levels of economic growth according to several studies done on the aspect factors affecting growth rates.

#### **2.3.3 Political Factors**

A conclusion that political factors affect the rates of growth in the economy was from many studies that were done on the topic. These studies were highly triggered by a study conducted by a researcher called Lipset (1959) on impact of political environment on economic. Economic growth is accelerated by reduced levels of uncertainty. This encourages investments, which is facilitated by a stable political environment. Democracy in a country may affect economic growth of a country both positively or negatively depending on the various channels that it passes, though the correlation is a little bit difficult. Political environment plays a crucial role in economic growth Kormendi & Mcguire, (1985).

### 2.3.4 Human Capital

Acquiring of skills and know-how through education and training by workers is what is termed as human capital. Scientific skills have used by many researchers in measuring the quality of human capital. According to various endogenous models and neo-classical growth models; it is the major source of growth. According to these theories, workers' acquisition of skills and knowledge through education and training is what is defined as human capital. As per the findings of many studies it has been established that education is a key determinant of economic growth Barro (1996).

#### 2.3.5 Unemployment Rate

The levels of economic growth in a country are highly affected by the levels of growth in the economy. This is based on the aspect of consistent levels of unemployment which have a negative impact on the economic growth. Rates of unemployment and economic growth are negatively related in that an increase in unemployment results in a decrease in economic growth in the short run. High and persistent levels of unemployment results to a recurrence of economic costs which become determinants of a long run economic growth Chatterjee & Corbae (2007).

Unemployment is both an economic cost to the society and also a high social cost for the individual Sanchis-i-Marco (2011). High unemployment indicates inadequate use of resources. It also lowers the levels of aggregate demand due to low consumption levels and low investments in physical and human capital thus deterring future production capacities Bean & Pissarides, (1993).

## 2.3.6 Openness to Trade

Ratio of exports to GDP is a basic measure of openness to trade. (Petrakos et al., 2007). According to Barro (1996) ratio of export to import prices on GDP is used to measure effect of change which is not mechanical. Improved trade increases real domestic income attributed to by no change in the physical quantities of goods produced domestically which in turn do not affect, real GDP. Shifts in terms of trade which stimulate changes in domestic employment are the only contributing factors to movements in real GDP

#### 2.3.7 Public Debt

According to Karazijienė and Sabonienė (2009), borrowing by the public is mandatory and has impact on the levels of economic growth. It stimulates growth in the economy by injecting money from foreign investors (external debt) together with distributing assets (internal debt) among those with excess and those who do not have assets for developing economic initiative. Interest rates on state bonds and treasury bills are usually very low compared to public borrowing. Public debt as a macroeconomic indicator creates a good or bad image of a country in international markets hence determining inward foreign direct investment flow determinants.

According to Martin (2009), current distortions can be reduced by delays in taxation which are attributed to by public debt. Economic growth is lowered down by low consumption levels which are caused by high tax levels.

## **2.4 Empirical Review**

There are numerous empirical studies both locally and internationally on national payment systems and economic growth, but most of these studies did not attempt to link the two variables.

## **2.4.1 Global Studies**

Hancock and Humphrey (1998) in his study ascertained that there is an increase in the use of electronic payments in the developed countries as from the findings of his study on the payment systems of 14 developed countries. Various contributing factors to different structures across countries were also examined in this study. Degree of payment availability (number of users, terminals, etc.) and institutional and cultural

differences (income, new payment instruments, etc.) were found to be the critical contributing factors.

Ohwofasa and Aiyedogbon (2013) carried out a study on financial deepening and economic growth in Nigeria. The study evaluated how economic growth was affected by levels of development of financial deepening in the banking. Vector autoregressive (VAR) and variance decomposition was used in the methodology. By so doing they were able to evaluate the relation between financial deepening and economic growth. As per the findings, there was a significant relation between the variables.

Safdar (2014) studied financial deepening and economic growth in Pakistan. Long run correlation between financial deepening and economic growth for Pakistan with inclusive of foreign direct investment and inflation was investigated. There is an interrelationship between financial deepening and economic growth as per Johansen's Co-integration test, hence long run relationship exists among variables for Pakistan.

## 2.4.2 Local Studies

Muli (2008), sought to explore empirically the correlation between the level of financial development and economic growth in Kenya. The study period was from 1967 to 2006. Not only did the study use Granger-causality analysis, but also Error Correction Model. Evidence of a positive correlation between economic growth and financial development was provided from the findings of the study. The major limitation of the study was that the nature of the relationship was not explained.

Nyamakanga (2013) carried out a study aimed at finding the causal correlation between stock market development and economic growth in Kenya. Purpose of the study was to ascertain the causal correlation between stock market capitalization, turnover and economic growth. Secondary data of a period between 1993 and 2012 was used. Findings indicated a significant positive relation between stock market development and economic growth. In addition, there was no causal effect between market liquidity (stock market turnover ratio) and economic growth.

Aduda, Chogii and Murayi (2014) investigated the impact of capital market deepening on economic growth in Kenya. Objective of the research was to find out impact of capital market deepening on economic growth in Kenya through including a measure of bond market turnover in the study. The study was based from 1992 to 2011. Real GDP of Kenya, was determined by use of correlation and regression analysis. Findings indicated that three out of five variables for capital market deepening had a strong positive relationship with GDP. They concluded that economic growth is highly affected by capital market deepening in Kenya.

Muiruri (2013) carried out a study with the objective of determining the relationship between national payment systems and the growth of the Kenyan economy. Secondary data from the central bank of Kenya was analyzed on quarterly basis to be in line with the quarterly GDP figures produced by the Kenya national bureau of statistics. Payment transactions done from September 2005 to March 2015 using RTGS, EFT, cheques, DFCC, ATM, POS, credit cards and mobile payment were considered while analysis involved descriptive and inferential statistics. The results of systems.

## **2.5 Conceptual Framework**

The conceptual framework gives a portrayal of how the factors identified were related to each other. The factors characterized here were national payment systems and gross domestic product. The independent variable included national payment system as measured by RTGS, EFT & cheques, DFCC and mobile payments measured on a quarterly basis. The control variables were inflation rates and interest rates as measured by CBK quarterly lending rate and foreign direct investment inflows on a quarterly basis. Gross domestic product was the dependent variable which the study sought to explain and it was measured by using quarterly GDP measured at market prices.

#### **Independent Variables**

#### **Dependent Variable**



# Source: Researcher (2017) Figure 2.1: The Conceptual model

## 2.6 Summary of the Literature Review

Various theoretical frameworks have attempted to explain the concept of national payment systems and economic growth. Four theories have been discussed in this theoretical review. The theories are namely: Endogenous growth model, finance-led growth hypothesis, growth-led finance hypothesis and the feedback hypothesis. Some of the key drivers of economic growth have also been discussed in this section. Several empirical studies have been conducted both internationally and locally on national payment systems and economic growth. The findings of these studies have also been discussed in this chapter.

The empirical studies analyzed indicate that different researchers have considered different variables with respect to economic growth and varying effect have been established depending on the country and or the period of study. Majority of the studies done in the local context have concentrated on the influence of macro-economic variables such as public debt, foreign direct investments, inflation among others and their influence on economic growth. It is this research gap that the current study attempted to study by answering the research question: What was the effect of national payment system on economic growth in Kenya?

## **CHAPTER THREE: RESEARCH METHODOLOGY**

## **3.1 Introduction**

This chapter will mainly outline the methodology to be used in this study. The research methodology encompassed research design of the study, data collection procedures used and lastly data analysis.

## **3.2 Research Design**

The study adopted case study research design. Kothari (2004) described case study as an intensive investigation of a given particular unit under consideration. It enables better understanding of a relatively complex case through contextual analysis which gives detailed description of given cases. Case study design helps in examination of real-life situations while providing a basis for the application of diverse concepts and theories.

The design was efficient in the study as it was able to minimize bias and was flexible enough. The selected research design was also appropriate enough in analyzing the effect of Kenya's national payment system on the country's economic growth.

## **3.3 Data Collection**

Mugenda and Mugenda (2003) clearly described a population as an entire set of individuals, objects or cases which have some shared observable attributes. The target population in this study included data obtained from the Kenyan economy between the period 2009 to the second quarter of 2017 which covered 34 quarters. This

included data relating to the various sub-payment systems forming the national payment system such as RTGS, EFT and cheques, DFCC and mobile money and data relating to economic growth rate and GDP of Kenya for the stated period. The target population helped in eliminating biasness by enabling reliability and validity.

The study embraced use of secondary data which was obtainable from Central Bank of Kenya database and KNBS. Data relating to national payment system was obtained from CBK while data relating to economic growth and the GDP was obtained from both KNBS and World Bank.

#### **3.4 Data Analysis**

The study being a quantitative research the secondary data obtained was analyzed using descriptive analysis and multivariate analysis. Data obtained was sorted, cleaned,standardized and classified accordingly. Descriptive statistics was used to show both measures of tendencies and dispersion.

Kothari (2004) defines multivariate analysis as analysis in which all statistical methods tend to simultaneously analyze more than two variables on a sample of observations. The analysis was done aided by the use of computer software mainly Microsoft Excel 2016 and XLStat- base excel add in software.

The independent and dependent variables were analyzed on a quarterly basis from the 1<sup>st</sup> quarter of 2009 to the 2<sup>nd</sup> quarter of 2017. The independent variables in the study were therefore aggregated from monthly data to quarterly data. The multivariate regression model used was:

## $Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \epsilon$

Where:

- Y Represented the Quarterly Gross Domestic Product measured at market price.
- $\alpha_0$  Represented the regression constant
- $\alpha_1 \alpha_2, \alpha_3, \alpha_4$  denoted the regression coefficients for the four independent variables.
- X<sub>1</sub> Quarterly value of total Real Time Gross Settlement transactions measured in Kes.
- X<sub>2</sub> Quarterly value of total combined Electronic Funds Transfer and Cheque transactions measured in Kenyan shillings.
- X<sub>3</sub> Quarterly value of total Domestic Foreign Currency Cheque transactions
- X<sub>4</sub> Quarterly value of total Mobile money transactions measured in Kenyan shillings.
- $\acute{\epsilon}$  Represents the error term

## **3.4.1 Diagnostic Tests**

Diagnostic test was adopted to determine whether the data exhibited normal distribution pattern. Shapiro –Wilk test was used to test for normality.

# **3.4.2 Tests of Significance**

The study employed use of One - Way ANOVA to test whether there were significant statistical differences among the means of the four independent variables.

# CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

# **4.1 Introduction**

This chapter mainly discussed data analysis, findings of the study, interpretation and presentation of the results. The purpose of this study was to establish the effect of national payment system to the growth of the economy in Kenya. The chapter covers diagnostic tests, descriptive statistics, correlation analysis, regression analysis and hypothesis testing and lastly discussion of the research findings.

# **4.2. Diagnostic Tests**

# **4.2.1 Normality Test**

The diagnostic test used to test for normality was Shapiro- Wilk test which was checking if the variables were exhibiting a normal distribution.

#### Table 4.1.1 Shapiro-Wilk test (GDP):

p-value (Two-tailed)	0.346
alpha	0.05

Test interpretation:

- H0: The GDP variable follows a Normal distribution.
- Ha: The GDP variable does not follow a Normal distribution.

As the calculated p-value 0.346 is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0. The risk of rejecting H0 while it is true is 34.6%. The GDP variable therefore follows a normal distribution.

Table 4.1.2. Shapiro-Wilk test (RTGS):

W	0.980
p-value (Two-tailed)	0.759
alpha	0.05

Test interpretation:

- H0: The RTGS variable from which the sample was extracted follows a Normal distribution.
- Ha: The RTGS variable from which the sample was extracted does not follow a Normal distribution.

As the calculated p-value=0.759 is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0. The risk of rejecting H0 while it is true is 75.9%. The RTGS variable therefore follows normal distribution.

Table 4.1.3. Shapiro-Wilk test (DomesticForeign Currency Cheque):

W	0.942
p-value (Two-tailed)	0.201
alpha	0.05

Test interpretation:

- H0: The DFCC variable follows a Normal distribution.
- Ha: The DFCC variable does not follow a Normal distribution.

As the computed p-value=0.201 is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0. The risk of rejecting H0 while it is true is 20.1%. The DFCC variable therefore follows normal distribution.

#### Table 4.1.4. Shapiro-Wilk test (Mobile Money):

W	0.944
p-value (Two-tailed)	0.079
alpha	0.05

Test interpretation:

- H0: The Mobile Money variable follows a Normal distribution.
- Ha: The Mobile Money variable does not follow a Normal distribution.

As the computed p-value=0.079 was greater than the significance level alpha=0.05, one could not reject the null hypothesis H0. The risk of rejecting H0 while it was true was 7.9%. The Mobile Money variable therefore followed normal distribution.

	0.856
W	
	0.0004
p-value (Two-tailed)	
	0.05
alpha	

 Table 4.1.5. Shapiro-Wilk test (EFT & Cheque):

Test interpretation:

- H0: The EFT & Cheque variable follows a Normal distribution.
- Ha: The EFT & Cheque variable does not follow a Normal distribution.

As the computed p-value=0.0004 was less than the significance level alpha=0.05, the null hypothesis H0 was therefore rejected while the alternative hypothesis was accepted. The risk of rejecting H0 while it was true was lower than 0.04%. The EFT & Cheque variable therefore did not follow a normal distribution pattern.

# 4.2.2 Homoscedasticity Test

Homoscedasticity is used to test whether all variance of error terms reflect similarity across all values of the respective independent variables. Breusch – Pagan test and White Test were used in this study to test for both homoscedasticity and heteroscedasticity. The findings were as presented in Table 4.2.2.1.

#### Table 4.2. Breusch – Pagan Test and White Test:

	Breusch -Pagan Test	White Test
LM (Observed value)	5.153484073	13.03433016
LM (Critical value)	9.487729037	23.6847913
DF	4	14
p-value (Two-tailed)	0.271908492	0.523822218
alpha	0.05	0.05

#### **Source: Research Findings**

## 4.2.2.1 Breusch – Pagan Test

Test interpretation:

- H0: Standard Residuals are homoscedastic.
- Ha: Standard Residuals are heteroscedastic.

Since the computed p-value =0.2719 which was greater than the significance level alpha =0.05, the null hypothesis was accepted which implied that multiple linear regression assumption of homoscedasticity was attained.

#### **4.2.2.2** White Test

Test interpretation:

- H0: Standard Residuals are homoscedastic.
- Ha: Standard Residuals are heteroscedastic.

Since the computed p-value =0.5238 which was greater than the significance level alpha =0.05, the null hypothesis was accepted which implied that multiple linear regression assumption of homoscedasticity was attained. The risk to reject the null hypothesis while true was 52.38%.

#### **4.3. Descriptive Statistics**

Descriptive statistics was used to show measure of tendency and measures of dispersions. These included Mean, median, standard deviation, minimum, maximum, range and sum. The Table for descriptive Statistics was obtained by analyzing using Microsoft excel 2016.GDP had a mean of Kes. 907,264.41 million with a standard deviation of 128,336.99 million while RTGS, EFT & Cheque, DFCC and Mobile Money had a mean of Kes. 5.636,845Bn, Kes. 730.412Bn, Kes. 340.09Mn, Kes. 475.774.81Bn respectively. On the other hand, the standard deviation of the four independent variables were 1.35952444Bn, 169.197Bn, 60.22Mn and 259.58618Mn for RTGS, EFT & Cheque, DFCC and Mobile Money Respectively. Table 4.1 also illustrates the maximum and minimum for each variable under analysis. The sum shows that RTGS which is one of the independent variables had the largest value for the given period totaling Kes.191.652738 trillion followed by EFT & Cheque, mobile money, DFCC which had Kes. 24.834016

trillion, Kes. 16.176343trillion, Kes. 4.065232 trillion and lastly Kes. 8.16214 billion respectively. GDP had a sum value of Kes.30.84699 trillion for the period under review.

	GDP	RTGS	EFT &	DFCC	MOBILE
			CHEQUE		MONEY
Count	34	34	34	24	34
Mean	907,264.41	5,636,845.24	730,412.23	340.09	475,774.81
Median	897,432.00	5,782,997.00	724,251.50	344.26	440,354.50
Standard	128,336.99	1,359,524.44	169,197.44	60.22	259,586.18
Deviation					
Minimum	705,260.00	2,203,045.00	504,723.00	219.39	89,581.40
Maximum	1,145,814.0	8,576,311.00	1,198,184.0	423.95	912,674.00
Pange	440 554 00	6 373 266 00	693 461 00	204 56	823 002 60
Kange	440,334.00	0,575,200.00	093,401.00	204.30	825,092.00
(Mn)					
Sum (Mn)	30.846.990	191.652.738	24.834.016	8.162.14	16.176.343
······		- , ,	, ,- <del>-</del>	- ,	- 7 7

 Table 4.3. Descriptive Statistics:

# **Source: Research Findings**

### **4.4 Correlation Analysis**

Correlation analysis helps in explaining whether there is existence of a relationship between two research variables. These includes both independent and dependent variables. The relation lies between perfect negative correlation (-1) and perfect positive relationship (+1). The study used Pearson correlation to test the level of association between the GDP and the four independent variables.

The Table 4.4. overleaf presents the findings of the correlation analysis which portrays that there was a positive correlation of all the independent variables to the GDP. The correlation between GDP and RTGS has a strong positive relationship with a correlation coefficient of 0.821. The same strong positive relationship is exhibited between GDP and mobile money with a nearly perfect positive relationship whose correlation coefficient stands at 0.967. Domestic foreign currency Cheque has a correlation coefficient of 0.520 which indicated a moderate positive relationship with the GDP. Electronic funds transfer and Cheque variables indicated a weak linear positive relationship with GDP with a correlation coefficient of 0.086.

There was a strong positive relationship between mobile money and RTGS transactions with a correlation coefficient of 0.873. This indicated presence of multicollinearity between the two independent variables. Variance Inflation Factor (VIF) was used to test presence and extent of multicollinearity between the four independent variables. The result is as presented in Table 4.5 overleaf.

Table 4.4.	Correlation	Matrix	(Pearson)	):
------------	-------------	--------	-----------	----

				MOBILE	EFT &
Variables	GDP	RTGS	DFCC	MONEY	CHEQUE
GDP	1	0.821	0.520	0.967	0.086
RTGS	0.821	1	0.552	0.873	-0.057
DFCC	0.520	0.552	1	0.555	-0.092
MOBILE MONEY	0.967	0.873	0.555	1	0.136
EFT & CHEQUE	0.086	-0.057	-0.092	0.136	1

#### **Source: Research Findings**

#### Table 4.5. Multicollinearity statistics:

		EFT &				
	RTGS	CHEQUE	DFCC	MONEY		
Tolerance	0.204	0.830	0.657	0.192		
VIF	4.908	1.204	1.523	5.197		

#### **Source: Research Findings**

Jongh P.et al. (2014) describes VIF as an index which is used to measure the how much extent of a regression coefficient is increased due to collinearity. They further indicate that a VIF which is lower than 10 is acceptable. The findings in Table 4.4.2 indicate a VIF of less than 10 for all variables which falls within the acceptable limit of less than 10. RTGS and mobile money variables had a high VIF of 4.908 and 5.197 respectively while EFT & Cheque and DFCC variables had low VIF of 1.204 and 1.523 respectively.

### 4.5 Regression Analysis and Hypothesis Testing

In this study the GDP was regressed against the four independent variables mainly real time gross settlement, domestic foreign currency cheques, mobile money payments and electronic fund transfers and cheques. A significance level of 5% was employed while undertaking the regression analysis.

Observations	34.000
R	0.9705
R <sup>2</sup>	0.942
Adjusted R <sup>2</sup>	0.934
MSE	1094263479.567
DW	1.948

**Table 4.6. Goodness of Fit Statistics:** 

#### **Source: Research Findings**

R<sup>2</sup> which equaled 0.942 (94.2%) indicated that 94.2% of the variability in the study was explained by the four predictor variables. The remaining 5.8% of the variability was explained by other variables not captured in the study. The findings also showed that there was presence of near perfect positive relationship among the predictor variables and the GDP as indicated by a correlation coefficient of 0.9705.

Durbin-Watson (DW) statistics in the regression analysis was 1.948. Durbin Watson test is normally used to test for autocorrelation in the residuals when performing a regression analysis. DW of 1.948 indicated presence of positive autocorrelation which falls within the normal range of between 1.5 to 2.5. It was relatively close to DW of 2 which indicates no autocorrelation.

## Table 4.7. Analysis of Variance:

Analysis of variance (GDP):					
Source	DF	Sum of squares	Mean squares	F	<b>Pr</b> > <b>F</b>
Model	4	511789031200	127947257800	116.925	< 0.0001
Error	29	31733640907	1094263479		
Total	33	543522672108			

# **Source: Research Findings**

**H0:**  $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$ 

**Ha:**  $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0$ 

The research findings indicated that since significance level alpha=0.05 was greater than p-Value <0.0001, the null hypothesis was rejected implying that the regression model was statistically significant in prediction of how the four predictor variables affect gross domestic product in Kenya.

# Table 4.8 Regression Model Coefficients:

Model parameters (GDP):				
Source	Value	Standard error	t	<b>Pr</b> >  t
Intercept				< 0.0001
	769,015.33	49,444.79	15.553	
RTGS				0.156
	(0.014)	0.009	(1.458)	
EFT &				0.129
CHEQUE	(0.058)	0.037	(1.565)	
DFCC				0.617
	(21.772)	43.031	(0.506)	
MOBILE				< 0.0001
MONEY	0.553	0.051	10.941	
Standardized coefficients (GDP):				
Source	Value	Standard error	t	<b>Pr</b> >  t
RTGS				0.156
	(0.145)	0.099	(1.458)	
EFT &				0.129
CHEQUE	(0.077)	0.049	(1.565)	
DFCC				0.617
	(0.028)	0.055	(0.506)	
MOBILE				< 0.0001
MONEY	1.119	0.102	10.941	

Source: Research Findings

The multivariate regression model used was:

## $Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \epsilon$

#### Where:

- Y Represented the Quarterly Gross Domestic Product measured at market price.
- $\alpha_0$  Represented the regression constant
- $\alpha_1 \alpha_2, \alpha_3, \alpha_4$ , denoted the regression coefficients for the four independent variables.
- X<sub>1</sub> Quarterly value of total Real Time Gross Settlement transactions measured in Kenyan shillings.
- X<sub>2</sub> Quarterly value of total combined Electronic Funds Transfer and Cheque transactions measured in Kenyan Shillings.
- X<sub>3</sub> Quarterly value of total Domestic Foreign Currency Cheque transactions in Kenyan shillings.
- X<sub>4</sub> Quarterly value of total Mobile money transactions measured in Kenyan shillings.
- έ Represents the error term

This regression model transformed to;

#### Y=769015.330-0.0137\*RTGS-0.0584\*EFT&CHEQUE-21.772\*DFCC

#### +0.5533\*MOBILE MONEY

The analyzed data indicated that Gross domestic product was determined to be Kes.769.015billion when holding the four independent variables at a constant of zero. It also indicated while holding all other predictor variables constant, that a unit increase in RTGS will reduce GDP by 0.0137. The same applies when holding all other predictor variables constant, a unit increase in EFT & Cheque will reduce GDP

by -0.0584. Still while holding all other predictor variables constant, a unit increase in domestic foreign currency cheques will reduce GDP by -21. 772.Lastly while holding all other predictor variables constant, a unit increase mobile money will increase GDP by 0.5533.

#### 4.6 Discussion of Research Findings

The study was able to determine that 94.2% of the variability in the study was explained by the four independent variables. The findings indicated presence of a strong positive linear relationship among the predictor variables and the GDP denoted by a correlation coefficient of 0.9705. Given that the regression model was significant as depicted in the analysis of variance test, this led to conclusion that the link between GDP and the four predictor variables mainly real time gross settlement, electronic fund transfer & Cheques, domestic foreign currency cheques and mobile money variables was significant.

The study findings were consistent with the study done by Ohwofasa and Aiyedogbon (2013) who carried out a study on financial deepening and economic growth in Nigeria. The paper evaluated how economic growth was affected by levels of development of financial deepening in the banking. As per the findings, there was a significant relation between the variables.

The study was also consistent with previous study done by Muiruri (2013) who carried out a study with the objective of determining the relationship between national payment systems and the growth of the Kenyan economy. The results of the study

also indicated a strong positive relationship between GDP and national payment systems whose finding concurs with this study.

Given that national payment systems are pivotal in deepening financial inclusivity the study was consistent with previous research done by Muli (2008) who had sought to explore empirically the correlation between the level of financial development and economic growth in Kenya. The study period was from 1967 to 2006. The study findings indicated presence of a positive correlation between economic growth and financial development.

# CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

### **5.1 Introduction**

This chapter mainly discussed Summary of the findings, conclusion and recommendations. It also covered limitations of the study and suggestions for further research studies.

### **5.2 Summary of Findings**

The objective of this study was to analyze the effect of national payment systems on economic growth in Kenya. The study used data obtained in the Kenyan economy following the rebasing of GDP data from the previous base year of 2001 to the rebased year of 2009. Data pertaining to GDP measured at market price was obtained from KNBS while data pertaining to national payment systems was obtained from Central Bank of Kenya (CBK). The research study employed the use of descriptive statistics, correlation analysis and multiple regression analysis which were analyzed using computer aided software mainly Microsoft excel 2016 and XLStat excel add in. The study period covered period the 1<sup>st</sup> quarter of 2009 to the 2<sup>nd</sup> quarter of 2017 which were 34 quarters.

Descriptive statistics indicated that the dependent variable which was quarterly GDP had a mean of Kes. 907.26441 billion with a standard deviation of 128.33699 billion while the independent variables RTGS, EFT & Cheque, DFCC and Mobile Money had a mean of 5.636,845 billion, 730.412Bn, 340.09Mn, 475.774.81Bn respectively. On the other hand, the standard deviation of the four independent variables were

1.35952444Bn, 169.197Bn, 60.22Mn and 259.58618Mn for RTGS, EFT & Cheque, DFCC and Mobile Money Respectively.

Correlation analysis findings indicated that there was a positive correlation of all the independent variables to the GDP. The correlation between GDP and RTGS had a strong positive relationship with a correlation coefficient of 0.821. The same strong positive relationship is exhibited between GDP and mobile money with a nearly perfect positive relationship whose correlation coefficient stands at 0.967. Domestic foreign currency cheques has a correlation coefficient of 0.520 which indicated a moderate positive relationship with the GDP. Electronic funds transfer and Cheque variables indicated a weak linear positive relationship with GDP with a correlation coefficient of 0.086.

The multiple regression analysis indicated that 94.2% of the variability in the study was explained by the four independent variables. This implied that 94.2% of the variations in gross domestic product can be explained by the four predictor variables namely RTGS, EFT & Cheque, DFCC and mobile money with only 5.8% variations being explained by other variables not covered in the study. There was also a strong positive linear relationship among the predictor variables and the GDP as denoted by a correlation coefficient of 0.9705.

From the regression model the results show that when all the predictor variables are zero the GDP will be Kes.769.015billion. It also indicated while holding all other predictor variables constant that a unit increase in RTGS will reduce GDP by 0.0137.

The same applies when holding all other independent variables constant, a unit increase in EFT & Cheque will reduce GDP by -0.0584. Still while holding all other independent variables constant, a unit increase in domestic foreign currency cheques will reduce GDP by -21. 772.Lastly while holding all other independent variables, constant a unit increase mobile money will increase GDP by 0.5533.

## 5.3 Conclusion

The study findings indicate that in Kenya the quarterly gross domestic product is significantly affected by national payment systems such as RTGS, Nairobi Automated Clearing House settlements specifically electronic funds transfer and cheques, domestic foreign currency cheques and mobile money payment systems. The study indicated that mobile money payment system had a positive effect on the GDP. There exists a direct effect whereby an increase in the value of transactions transacted using mobile money leads to an upward economic growth and vice versa. RTGS, EFT & Cheque and DFCC had a negative effect on the GDP. This implied that an increase (decrease) in the three payments systems would lead to a decrease (increase) in GDP hence exhibiting an inverse effect.

The findings of the study also indicated that 94.2% of all the variations in the study had been explained by the four predictor variables. This thereby explains that to a large extent of more than 94.2% the four predictor variables determine the level of GDP.

## **5.4 Recommendations**

The Kenyan economy has been growing steadily over the years. This is also exhibited by increased proliferation of national payment systems over the years. The study recommends based on the findings, that monetary policy formulators should encourage and allow further mobile money payment systems innovations that will lead to increased penetration of mobile money payment system which has been noted to have a positive effect on the GDP which ultimately leads to increased economic growth in Kenya.

Another recommendation is that there is a need of more payment systems to aid in deepening financial inclusion and penetration in the country specifically a payment system which would positively and directly affect consumption of goods and services in Kenya.

## 5.5 Limitations of the Study

The study used data obtained from the Kenyan economy between the period January 2009 to June 2017. The quality of the research data following rebasing of GDP data was therefore assumed to be accurate as the study was based on secondary data.

# 5.6 Suggestions for Further Research

Given that the study indicated that mobile money payment systems had a positive effect on the GDP there is need to do further research on the effect of mobile money sub- payment systems such as eCitizen, eJiji pay and others on the economic growth.

Given that the country is encouraging cash-light economy through e-commerce platforms such as business to business, person to government, consumer to business among others there is a need to assess their impact on the Kenyan economy.

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# APPENDICES

Appendix 1: Research Variables (Kes. Mn)

Quarters	GDP	RTGS	EFT & CHEQUE	DFCC	MOBILE MONEY
2009Q1	737,906.00	3,847,350.00	1,116,083.00	-	89,581.40
2009Q2	713,364.00	2,203,045.00	1,198,184.00	-	109,001.90
2009Q3	705,260.00	3,510,310.00	1,185,027.00	-	126,384.40
2009Q4	707,159.00	4,364,690.00	516,935.00	-	148,443.80
2010Q1	786,481.00	4,406,730.00	509,038.00	-	154,484.70
2010Q2	767,418.00	4,524,540.00	504,723.00	-	167,992.40
2010Q3	761,159.00	3,962,750.00	547,556.00	-	191,810.00
2010Q4	789,245.00	4,206,710.00	584,443.00	-	217,932.80
2011Q1	845,861.00	4,410,260.00	575,000.00	-	240,766.00
2011Q2	818,825.00	6,212,820.00	576,825.00	-	273,103.80
2011Q3	805,573.00	5,888,270.00	621,078.00	380.08	315,749.40
2011Q4	823,766.00	5,382,460.00	624,837.00	382.38	339,531.00
2012Q1	880,802.00	4,763,950.00	620,135.00	377.54	356,844.00
2012Q2	853,430.00	4,832,158.00	631,232.00	398.92	369,783.00
2012Q3	847,709.00	4,936,774.00	638,002.00	423.95	391,350.00
2012Q4	862,398.00	5,346,685.00	664,228.00	394.01	426,830.00
2013Q1	934,377.00	4,811,563.00	632,964.00	416.84	418,225.00
2013Q2	917,617.00	5,591,197.00	672,293.00	384.73	453,879.00
2013Q3	902,369.00	6,078,898.00	700,670.00	410.48	496,450.00

2013Q4	892,495.00	6,187,320.00	727,102.00	386.46	533,005.00
2014Q1	982,831.00	5,677,724.00	721,401.00	342.10	543,970.00
201402	072 665 00	6 267 246 00	740 700 00	245.25	574 706 00
2014Q2	972,665.00	6,367,216.00	740,709.00	345.35	574,706.00
2014Q3	944,042.00	6,814,349.00	774,141.00	376.03	614,053.00
		6 704 006 00	704 205 00	242.47	630 065 00
2014Q4	942,493.00	6,701,926.00	784,395.00	343.17	639,065.00
2015Q1	1,039,409.00	6,451,715.00	769,847.00	318.63	650,508.00
2015Q2	1,026,867.00	6,935,904.00	788,536.00	296.65	671,819.00
2015Q3	1,001,186.00	8,576,311.00	804,808.00	328.56	734,524.00
201504	994 079 00	7 616 759 00	806 000 00	310 16	759 248 00
201304	554,675.00	7,010,735.00	000,000.00	510.10	733,240.00
2016Q1	1,094,619.00	6,858,744.00	778,454.00	280.01	774,140.00
2016Q2	1,091,052.00	6,441,028.00	804,089.00	278.42	818,733.00
2016Q3	1,058,371.00	6,489,790.00	803,388.00	295.51	862,612.00
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2016Q4	1,055,045.00	7,096,396.00	812,755.00	240.84	900,092.00
2017Q1	1,145,814.00	7,001,327.00	806,614.00	231.94	899,052.00
2017Q2	1,145,303.00	7,155,069.00	792,524.00	219.39	912,674.00