EFFECT OF MACROECONOMIC FACTORS ON LEVELS OF NON-PERFORMING LOANS AMONG LISTED KENYAN COMMERCIAL BANKS

BY

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D61/79041/2015

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

DECEMBER 2018

DECLARATION

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

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This thesis has been submitted for examination with my approval as the university supervisor.

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ACKNOWLEDGEMENT

I thank my supervisor and mentor Dr. Winnie Nyamute, for her unwavering support and guidance throughout this study.

I also thank my Parents Mr James Gitahi Muta and Mrs Nancy Njeri Muta for cheering me on to completion of the study and for their support throughout the study period.

I would like to my sisters: Irene, Ann and Joy for their support and encouragement through study period.

I would like to acknowledge my little brother Emmanuel Gitahi for being my cheerleader.

I would like to thank my friends Ann, Esther and Emma who offered guidance in this study, and for encouraging me not to give up.

DEDICATION

I dedicate this project to God, my parents Mr. and Mrs. Muta, my four siblings for their encouragement and support throughout the study period and in this project. I also dedicate this project to my 19 weeks unborn child who is the reason why I am fully dedicated to this research.

LIST OF ABBREVIATIONS

NPL	Non Performing Loans
GDP	Gross Domestic Product
CPI	Consumer Price Index
NSE	Nairobi Securities Exchange
CBK	Central Bank of Kenya
KNBS	Kenya National Bureau of Statistics

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ABSTRACT

Non- performing loans have been the leading cause of market failure at both the global and local level in any given economy. NPLs receive so much attention as they pose so much problems. First on the weight on the balance sheet by curbing their profits, undermining costs in a bank and creating a strain on resources available. High levels of NPL weaken a bank and keep it from doing its job, which is to finance the economy. This study therefore, examined the effect of interest rates, GDP, CPI and exchange rates on NPL levels among 11 NSE listed commercial banks in Kenya. The research used descriptive research design and focused on the 11 banking institutions listed by the NSE in Kenya. The research utilized secondary data and considered quarterly data for a period of 6 years from 2008 to 2017. Data was analyzed using descriptive and inferential statistics, which included correlation analysis and regression analysis. The SPSS statistical software was used to analyze the collected data. The findings established that inflation rate was negative which showed that a negative relationship existed between inflation rate and non-performing loans. The study also confirmed that an increase in interest rates and exchange rate lead to a decrease in the number of people taking loans leading to the rise in non-performing loan leaves among commercial banks in Kenya. The ANOVA statistics indicated interest rate was statistically significant while exchange rate, inflation rate, and GDP growth rate were not found to be statistically significant individually in predicting the relationship of the variables. The study therefore recommends that the Central Bank of Kenya and other regulators in the market should put in place policies that will ensure control of macro-economic variables such as inflation rate, interest rate, exchange rate through various monetary and fiscal policies so as to moderate the volatility being experienced in the economy.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Major determinants of non-performing loans in the banks can be determined through the measure of credit risk of loans borrowed by the consumers that can be calculated using the probability of default (PD), exposure at default (EAD) as well as loss given default (LGD). Investigation on financial stability in the banking sector has turned into the foundation of present day macroeconomic approach Vogiazas and Nikolaidou (2011). As noted by Nkusu (2011), the determinants of NPL can be macroeconomic, monetary, or absolutely institutional. Bucher et al., (2013) affirm that the macro-economic approach assumes an essential part in the budgetary dependability of banks. The execution of banks in a financial downturn is along these lines enhanced just for the settlement of economy where imperative commitment can be made by credible macro-strategy (Bucher, Dietrich & Hauck, 2013).

This research was developed with the support from three theories i.e. credit creation of banking theory, financial accelerator theory and the loanable funds theory. Financial accelerator theory stipulates that data asymmetries exist among the borrowers and the loan specialists in the credit markets and that the reports from the accounting department develop significant impact on the work done to improve the spread of credit market shocks into an economy. The theory assigns that because of monetary tremors, borrowers might not have the inclination to lenders and there is a likelihood of them dodging to reimburse their credits (Bernanke and Gertler, 1989). The intersection between the demand and supply of loanable funds results to equilibrium rate of interest as stated in the loanable

funds theory. It is stipulated in the credit creation theory that money can be created by the banks such that the money lend out to the borrowers do not only come from the banks' deposits but rather create deposits through bank lending.

Kithinji and Waweru (2007) observed that since 1986, Kenya has been battling with banking problems with about 37 fizzled banks in 1998. As indicated by Waweru and Kalani (2009), the emergencies were basically ascribed to NPLs. According to Mullei(2003),Daima bank was set under statutory administration for neglecting to meet the base center capitalization edge and also poor administration of credit portfolios. As indicated by the CBK (2016), the proportion of gross NPLs to net loans expanded from 8.4% in June 2016 to 9.1% in September 2016. This study investigated the effect of interest rates, growth in the GDP, exchange rates and inflation rates on NPLs in the Kenyan banking sector. The study used secondary data which was available from commercial banks' financial statements and the CBK website. Commercial banks indicated in their annual financials the amount of NPLs in that particular year.

1.1.1 Macroeconomic Variables

The depiction and estimating of macroeconomics require insights on macroeconomic factors (Ghosh, 2015). The most noticeable of these factors was the GDP, swelling, financing costs, and joblessness, yet there are numerous others. The GDP measures add up to salary, since the installments for the aggregate generation must go to somebody, for the most part to the makers of those products and enterprises. For 2016, the GDP for Kenya was 70.53 billion US dollars. Since the measure of GDP relies upon installment for the item or administration, just those items and administrations are estimated. Exercises where lawful installments were not made were not announced, so they are not some portion of the

GDP. In real economies, a large portion of these unreported things are just a little part of the aggregate GDP, however in numerous poor nations, unreported installments can constitute a noteworthy offer of the economy (Bucher et al, 2013).

Work and joblessness rates are additionally huge macroeconomic factors. Joblessness rises when organizations lessen their generation, typically when the economy enters a subsidence (Bucher et al, 2013). The joblessness rate falls when the economy is developing. On the off chance that the economy develops too quick, deficiencies may build, prompting higher costs. Another key macroeconomic variable was swelling, which can come about when the circulation of cash surpasses the requirement for cash, which happens when the supply of cash increments speedier than the economy. What's more, organizations are adversely affected by short-run expansion, however finished the long haul, the economy adjusts to the more noteworthy supply of cash, causing higher wages and costs. Another imperative variable was financing costs, as estimated by the cost of credit, the cost of acquiring cash. National banks have critical control over the financing cost, since they can set loan fees for different banks and they can likewise control the supply of cash (Ghosh, 2015).

1.1.2 Non-Performing Loans

Non-performing loans (NPLs) proportion was a standout amongst the most important indicators of the budgetary soundness of the banking system (Joseph, Edson, Manuere, Clifford & Michael, 2012). NPLs distinguish problems with resource quality in the loan portfolio. The more deteriorated the nature of the credit arrangement of the bank the more was its NPLs. Subsequently loaning movement infers credit risk which ought to be legitimately overseen by banks. Nation hones changes in characterizing nonperforming

loans. Some utilization quantitative criteria, for example, the quantity of days past due, others depend on subjective standards, for example, the customers' money related status, administration judgment about future installments. The approach expressed in the controls of the Capital Accord of Basel II expresses that NPLs as credits that are past due and unpaid for over 90 days (Louzis, Vouldis& Metaxas, 2012).

The loans where banks neither gain premiums including the instalments as in the agreements are described to be non-performing loans (NPLs). This happens because the borrower's defaults or stops making payments for the loans to the banks. Non-performing loans are described as those that are at least 90 days past their agreed date of payment and are generating no interests anymore this is according to Joseph, Edson, Manuere, Clifford and Michael (2012). Furthermore, defaulted loans can be categorized under non-performing loans as stated by Badar and Javid (2013).

1.1.3 Macroeconomic Variables and Level of Non-Performing Loans

Risks contained in appraisal process in credit risk, one risk of loans as a rule dictated in the most part by the individual elements identified with a loan candidate, and various macroeconomic variables are utilized to clarify it (Gezu, 2014). Some conditions with less macroeconomic risks, due to the weight quirky risks have greater impact and thus in connection to this, related markers of credit candidates in basic leadership is more imperative. At the point when the monetary state of numerous indebted individuals was adequate, and the macroeconomic variables were not viewed as enough, events for a credit blast emerge. Trautmann and Vlahu (2013) have demonstrated that credit blasts were a portion of the best pointers of a money related emergency in budgetary markets, and they can altogether decrease the monetary steadiness.

Loan accumulation was influenced by high default credit rates in the downturn of finances which reduced the banks' ability to offer loans and thus the expansion of the banks (Berrios 2013). What's more, the monetary vulnerability about the dissolvability of different borrowers comparably builds the rate of a fixed loaning arrangement, regardless of the loan candidate's condition. The indebted individuals' defaults during financial pain can along these lines spread into a default by dissolvable borrowers that can't get loans and grow their business (Trautmann&Vlahu, 2013). Berrios (2013) contends that amid the extension period of the economy, there was a tendency to be moderately low number of NPLs, as borrowers confront an adequate stream of salary to benefit their obligations. Notwithstanding, the suggestion was that as the blasting time frame reaches out, in the process credit was given to bring down quality account holders and consequently, when the subsidence stage sets in, NPLs increases. Inflation rate also influences firms'/individual ability to service loans. Gezu (2014) shed light on the effect of interest rate in servicing debt especially for floating rate loans. An increase in interest rate worsen debt burden as a result of increased interest payment, resulting in high number of NPLs.

1.1.4 Kenyan Commercial Banks and Non-Performing Loans

Kenya as a country has a total of forty commercial banks which was a reduction from the sum of forty two. Some banks in the country such as chase and Imperial banks were in receivership while others were being merged such as Giro commercial bank into I & M holdings whereas DTB acquiring Habib Bank Limited Kenya, this was according to (CBK, 2017). Kithinji and Waweru (2007) observed that since 1986, Kenya had been battling with banking problems with about 37 fizzled banks in 1998. As indicated by Waweru and Kalani (2009), the emergencies were for the most part ascribed to NPLs. Mullei (2003) found that

Daima bank was set under statutory administration for neglecting to meet the base center capitalization edge and poor administration of credit portfolios. By March 2015, the non-performing loans was Ksh.117.2 billion which later rose to Ksh.172.9 billion by March the following year 2016 which was estimated to an increase of about 47.5% in a span of one year. This brought about an expanded proportion of gross NPLs to net loans of 7.8% in March 2016 from 5.7% in March 2015 (KNBS, 2016).

In the first quarter of 2018, Gross Domestic Product (GDP) had an expansion of about 1.9% as compared to the last year's first quarter. Since 2005 to 2018, Kenya has been estimated to have an average growth off about 1.33% which hit the highest at all time of 3.80% in 2010 and the lowest of -2.40% in the 2008's first quarter. By June 2018, annual inflation rate was reported to have increased to 4.28% from 3.95% in May in Kenya which was still under the market expectation of 5.3%. The average inflation rate in Kenya between 2005 to 2018 was 9.87% which hits an all-time high of 31.50% in May 2008, the lowest recorded percentage was 3.18% by October 2010. In the Kenyan history, the highest Kenyan shillings exchange rate against dollar ever reached is 106.15 in September 2015 and the lowest exchange rate of 36.23 in January 1993 (CBK, 2018). Consequently, the increase in NPLs was attributed to delays in payments to suppliers and contractors and challenges in the business environment. Another report by the CBK (2016) shown that the ratio of gross NPLs to total credit increased from 8.4% in June to 9.1% in September 2016. The growth of GDP in 2016 was 5.8% while the CBK maintained the CBR at 10.0% as the inflation increased due to increased food prices (KNBS, 2017)

1.2 Research Problem

For banks to fulfill their commitment by maintaining financial stability in a nation was dependent on their ability to minimize NPLs by ensuring their clients pay their loans on time. This was the reason NPLs of banks, as a rule, was something that the policy of financial aspects and national banks were firmly concerned. Kithinji and Waweru (2007) observed that since 1986, Kenya had been battling with banking problems with about 37 fizzled banks in 1998. As per Waweru and Kalani (2009), the emergencies were fundamentally credited to NPLs. For instance, Daima bank, as per Mullei (2003) was set under statutory administration for neglecting to meet the base center capitalization edge and in addition poor administration of credit portfolios. As indicated by the Central Bank of Kenya (2016), the proportion of gross NPLs to net loans expanded from 8.4% in June 2016 to 9.1% in September 2016.

Several empirical studies have investigated macroeconomic determinants of NPLs for various regions and countries, and the greater part of them locate a backwards connection between macroeconomic condition and NPLs.Ghosh (2015) contemplated banking industry particular and local monetary determinants of NPLs with evidence from US states. Zhu et al (2014) contemplated the connection between profitability, proficiency, and NPLs in the Chinese saving money industry. Barongo (2013) contemplated the components contributing to NPLs in non-managing an account foundation in Tanzania utilizing the case of National Security Fund. Beck, Jakubik and Piloiu (2013) studied panel data set to contemplate the macroeconomic determinants of NPLs crosswise over 75 nations in the period 1998-2011.

Causes of NPLs and comparative data analysis was done by Muriithi (2013) and Warue (2013) respectively in Kenya in order to determine the impact of banks particularly the macroeconomic factors on non-performing loans in the Kenyan commercial banks. Omondi (2014) contemplated the impacts of inflation on commercial banks' loaning with the case of Kenya Commercial Bank Limited. Imbuga (2014) evaluated the impact of inflation on loan reimbursement among commercial banks in Kenya. Chege (2014) researched the impact of financing costs on NPLs in commercial banks in Kenya for five-year time frame (2009– 2013). Albeit all the above examinations have concentrated on the impact of full scale monetary factors on NPLs, they none has contemplated the impact of the four large scale financial factors (inflation, exchange rate, interest rate and GDP development) and the total impact on the levels of NPLs in the NSE listed Kenyan commercial banks. Besides, the present examination concentrates on a period which has before never been contemplated (2008-2017). To fill the hole, the study sought to establish the impact of macroeconomic factors on the level of NPLs in Kenya commercial banks listed at the Nairobi Securities Exchange (NSE)?

1.3 Objective of the Study

The objective of this study was to find out some of the effects as a result of macroeconomic factors levels on non-performing loans among listed commercial banks in Kenya.

1.4 Value of the Study

This study will benefit commercial banks' managers to enable them to understand the linkage between macroeconomic factors and levels of NPLs. Managers will also differentiate between macroeconomic and institutional factors causing increase in NPLs and be able to take measures. The study will also be of benefit to the government of Kenya

and especially regulatory agencies like the Central Bank. One of Central Bank's mandates is to ensure the soundness of commercial banks. Increased loan defaults mean an unhealthy banking sector which can collapse the economy. The Central Bank will therefore benefit from this study in that it will understand the specific macroeconomic factors affecting NPLs and how to deal with them as it also is involved in managing the national economy through its various intervention tools. The results from this study will be significant and important to the future researchers since it will be adding value of knowledge to the existing knowledge.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter we shall deal with theory reviews that support this study. Theories that were looked at in this chapter include Piaget's theory that deal with cognitive development and Trompenaars' model of national culture differences. After theoretical review, the various determinants of NPLs were discussed and in particular the macro-economic variables. After this, empirical studies, both local and international similar to the current study were reviewed and the research gap identified before summarizing the literature review.

2.2 Theoretical Review

There are models supporting this work such as financial accelerator theory, Loanable funds theory and Credit creation theory of banking. Financial accelerator theory stipulates that asymmetrical data exist among the borrowers and the loan specialists in the credit markets and that the reports from the accounting department develop significant impact on the work done to improve the spread of credit market shocks into an economy. The intersection between the demand and supply of loanable funds results to equilibrium rate of interest as stated in the loanable funds theory. It is stipulated in the credit creation theory that money can be created by the banks such that the money lend out to the borrowers do not only come from the banks' deposits but rather create deposits through bank lending.

2.2.1 Financial Accelerator Theory

Bernanke and Gertler (1989) developed this theory. The financial quickening effect impact can be portrayed as takes after. An adjustment in total financial movement causes a change in economic agents' total assets in view of a positive relationship between them. Because

of flawed data, the terms under which economic agents can raise external finance, henceforth additionally the outside fund premium, are contrarily identified with their total assets. In so far as the outer back premium is conversely identified with economic agents' total assets, the procyclical conduct of financial operators' total assets over business cycles suggests countercyclical conduct of the outside fund premium (Bernanke et al, 1999). This opposite connection between yield changes and the outer back premium makes obtaining more troublesome and additionally costly amid subsidence than amid the expansionary stage. This thus misrepresents swings in speculation, spending and generation over business cycles. For instance, any negative financial stun that may prompt a diminishing in monetary operators' total assets would likewise build the external finance premium. Thus, because of higher expenses, and additionally lessened capacity to borrow, the general level of operators' speculations, spending and creation will diminish. Thus, that will discourage the economy significantly further (Christensen and Dib, 2008). Economic influences that can be increased and spread by the budgetary quickening agent system incorporate all stuns that reason: changes in the estimation of financial specialists' fluid resources (change in real money position, short-term financial asset, and so forth) for example, an adjustment in efficiency, an adjustment in total request caused by a diminishing in cash supply, an abatement in foreign demand, and so forth.; changes in the estimation of financial operators' illiquid resources, that can emerge due to either an adjustment in loan fee or an adjustment in the benefit costs which may be as a result of produced strategies of financial activities or due to variation in the assumptions regarding the future financial execution, and so on.; change in monetary operators' extraordinary

commitments can likewise be caused by an adjustment in the loan cost, under the presumption that exceptional loans are liable to variable loan costs (Bernanke et al, 1999).

2.2.2 Loanable Funds Theory

The intersection between the demand and supply of loanable funds results to equilibrium rate of interest as stated in the loanable funds theory. Also, the rate of equilibrium intersection can be determined from the point where curve of demand for loanable funds intersects with the supply curve of loanable funds. Two elementary units of economy results to demand for loanable funds which includes the consumers demand loanable funds and consumers and business firms since they prefer current goods to the same amount of future goods. According to Bohm-Bawerk (2004), on average, people have a positive rate of time preference. This simply means that people subjectively value goods to be obtained in the immediate or near future more highly than goods obtained in the distant future.

The willingness to borrow was represented by the market demand curve for bonds whereas the willingness to lend and save was represented by the market supply curve for bonds. The CB's are treated as the final credit suppliers because they are the last hope that source the loanable funds. Credit was demanded by firms, households and the governments. The rate of interest have inverse correlation with the borrowed amount whereas the amount lent has direct correlation with the rate of interest. Consequently, the resulted market demand curve has negative gradient while the market supply curve poised a positive gradient, this was according to (Mishkin, 2004). At the equilibrium point referred to as the market equilibrium, the amount lent balance with the amount borrowed and having the market cleared. It can then be assumed that it was free to adjust the interest rates without

interference from the government from the results of intersection between supply and demand (Mishkin, 2004).

2.2.3 Credit Creation Theory of Banking

In the credit creation theory, it was stipulated that money can be created by the banks such that the money lend out to the borrowers do not only come from the banks' deposits but rather create deposits through bank lending (Werner, 2014). As a result of lending, the consequence to the banks was coming up with bank deposits. In that regard, the amount of money that can be created by the bank was not affected by the deposits taken and the new purchase power act that never existed before was created that governs lending activities. Money was destroyed by repayment to recover existing debts which was as a magnitude of minimizing bank loans which comes on the asset side in the balance sheet and the liability side of the same balance sheet which was as a result of customer deposits. The consequence of variety of factors was suffered by the ability of the banks to create credit money also referred to as new money. To begin with, in an economy, more than 95% of the total transactions non-cash which are as well settled by non-cash transfer means in the banking system. The combination of lending and deposit activities gives banks the ability to create new money.

Considering the financial system, banks were considered to be acting as accounts of records which enabled the banks to come up with an assumption that the borrowers in the bank deposited money. It was difficult for common people to differentiate between the money created by the bank and those saved by depositors. The client money rule came as a result of the banks' ability to create new money. Control measures such as the client money rule prohibit non-bank organizations from creating new money since the non-bank

organizations such as the stockbrokers, accountants etc. are supposed to keep money from the client different from assets and liabilities of non-bank organizations on a different balance sheet. Banks are capable of labeling liabilities on the balance sheet at varied stages due to their exemption from the client money rules when increasing the loan which will have an effect of expansion of the banks' balance sheets (Werner, 2014).

Confidence by the commercial banks that loans given out will be repaid was a key determinant of creating new money. Credit default risk was an important banks' perception that should be taken into account since it influences the amount that can be lent out by the bank. The level of credit default risk particularly connected with property lending reduces the banks' perception when there was strong property growth over a long period of time since the consequence of money owed was as a result of failure of the borrowers to repay their loans and would be recovered by the bank through taking the possession of the property that was used as the collateral. Secondly, loans can be repaid by the borrowers when the value of the collateral surpasses the total loan amount. It would be perceived by the bank that the prices of lending results to a very low credit default risk due to continuous increase of property prices which would then lead to a very low level of credit default risk in the process. Significant decrease in the prices of property was likely to increase the levels of credit default and the provision by the bank for doubtful and bad debts (Werner, 2014).

2.3 Determinants of the level of Non-Performing Loans

Trautmann and Vlahu (2013) poised that NPLs were dictated by two arrangements of variables after some time. One group center around outer occasions, for example, the general macroeconomic conditions, which were probably going to influence the ability of the borrowers to repay the sum they owe the banks whereas on the other hand a gender was

taken on changeability of NPLs crosswise over banks, properties the level of NPLs to bank-level elements. The determinants of NPLs ought not to be looked for solely in macroeconomic components which are seen as exogenous powers affecting the managing an account industry (Louzis et al, 2012).

There was critical empirical evidence with respect to the counter repeating conduct of the NPLs (Louzis et al, 2012). The general clarification was that higher real GDP development more often than not converts into more wages which enhances the obligation adjusting limit of borrowers. On the other hand, in case the cost stoppage of the NPLs levels occur and is thought to increase with increase in joblessness and those who borrowed confront more prominent troubles to reimburse their obligation. Quality of the assets in the banks were found to be influenced by so many other macroeconomic factors such as incorporate the interest rate, exchange rate, and inflation. This study focused on macroeconomic factors and their impact on the extent of NPLs (Trautmann&Vlahu, 2013).

2.3.1 GDP Growth

According to Islamoğlu (2015) the most prominent macroeconomic variables were inflation, GDP, unemployment and interest rates but there were many others. GDP was described as the service and product cumulative estimate realized annually within a country. Gross domestic product likewise measures add up to wage, since the installments for the aggregate creation must go to somebody, as a rule to the makers of those merchandise and enterprises. For 2016, the GDP for Kenya was 70.53 billion US dollars (Kenya Bureau of Statistics, 2017). Since the measure of GDP relies upon installment for the item or service, just those items and services are estimated. Exercises where legitimate installments were not made were not announced, so they were not some portion of the

GDP. In significant economies, the greater part of these unreported things are just a little portion of the aggregate GDP, however in numerous poor nations, unreported installments can constitute a noteworthy offer of the economy (Škarica, 2014).

GDP was one of the key pointers of the economic measure of any nation. This study deals with the real GDP which forms the macroeconomic measure of the financial yield estimation for the expected changes. Reduction in the NPL levels was connected with increase in GDP (Beck, Jakubik and Piloiu, 2013). This was on the grounds that a solid positive development in genuine GDP for the most part converts into more wage which enhances the obligation overhauling the borrowers' limit, which thusly adds to bring down NPLs (Khemraj and Pasha, 2009). Consequently, there was a negative association between the involved factors. This was on the grounds that higher genuine GDP development for the most part converts into more salary which enhances the obligation adjusting limit of borrowers. On the other hand, when there exists a log jam in the economy, the NPLs level was probably going to increment as unemployment cases emerge and borrowers confront more prominent troubles to reimburse their obligation.

2.3.2 Inflation Rate

Inflation was characterized as a period of by and large rising costs for merchandise and factors of creation (Trautmann&Vlahu, 2013). In any economy, expansion was undesirable in view of the particular financial expenses related with inflation. In the first place, when inflation was high, money and noninterest-bearing financial records are undesirable since they are continually declining in buying influence. Secondly, tax distortion such as inflation depletes the value of deductions. Inflation has the effects of either loss or gain i.e. when there was inflation, people waiting for pension fixed in shillings became great losers

since their future earning value decreased. The impact of inflation on NPLs might be questionable. On one hand, rise in inflation can make obligation overhauling less demanding by lessening the interest rate, however, it can likewise diminish the lender's genuine salary when compensation are sultry (Khemraj& Pasha, 2009).

According to (Nkusu, 2011), the states where loan rates are treated as variables can experience higher inflation that can lead to having increased rates as a result of strategy activities including money in fight of inflation. Some research revealed that stock cost influence NPLs and that the falling cost of shares can have rich impact that could result to reduced securities. Banks are supposed to organize themselves to ensure that they do not lose the value of their lent money due to increased inflation. In response to that, higher profits are expected by the investors from the deposits they make to feel candid estimation of their cash assets. The struggle by financiers and stockholders to achieve higher yields that should be used to cover for premium expansion, there would be proportional premium rates increase. Adverse effects from such activities were increased loan cost that results to default danger that further increases the general loan cost hence inflation. Negative coexistence was expected to exist between loan reimbursement and inflation. The increased inflation rates on one hand should result to decreased credit reimbursement rates on the other hand (Khemraj& Pasha, 2009).

2.3.3 Rates of Exchange

Genuine swapping scale was the rate of exchange in this research as it is characterized by the cost of money a country was having in regard to another cash. Decreased value in the local currency of a country results to an overpriced goods importation which affects the loans that were given out to the dealers by their respective commercial banks thus

jeopardizing the default through expansion and in some other ways (Badar and Javid, 2013). States with higher levels of loaning in the local monetary standards experience a serious effect of exchange rate on the NPL level to unprotected borrowers (Turan&Koskija, 2014). A normal positive connection was realized between two factors along the lines loan misfortunes may be influenced by exchange rate for the loans named in local money which was normally the case in developing markets. Obligation load may be influenced by the adjustments in the conversion scale since there was no money coordinating between the family units and the salary and the loan obligations. Loan misfortunes for the banks are prompted when deterioration experienced for household money result to building obligation and failure of the borrowers to repay the loans.

2.3.4 Interest Rates

According to (Crowley, 2007), the value a borrower pays in response to the utilization of the cash they borrow from the financiers' institutions or expense paid on borrowed resources was referred to as interest rate. Exercises of commercial banks are hugely impacted by the variances of the market loan costs applied. Costs offered to shoppers are financed by the banks upon their decisions and the line generating home loan closes as acquired by the speculator. Contract support securities are paid for by the market clearing cost financial specialists as decided by the free market. The financing cost that was offered to the purchasers was decided by the cost input through the home loan industry. Managing account gainfulness was enhanced by the escalating amount of the market financing costs. Furthermore, banks' productivity was resulted to from loan fee spread and it appears to have rapid impact from the start of loaning rates becoming net worthy as compared to the store rates (Chege, 2014).

The mode received by the banks in conveying their administration was decided by a critical factor such as the stochastic conduct of the market rates. The financing cost vulnerability was a subject to either bank transformers or specialists being the banks. Banks try to limit the risks from an unstable loan cost condition by playing the part of representatives in just linking liabilities and landing of benefits. Important monetary determinants of NPLs or awful loans are the financing costs, this was according to (Farhan et al, 2012). This gave the quantitative measure of the obtained assets (Louzis et al, 2012). The performing resources in the banks are influenced by expansion and financing cost as the cost of loans charged on those who borrow was expanded and thus reducing the borrowers' ability to reimburse the loan (Ombaba, 2013). Sure, reliance was upon the connection between loan fee and the NPLs.

2.4 Empirical Studies

Dataset was used by Beck, Jakubik and Piloiu (2013) to determine NPLs' Microeconomic determinants in the study crosswise over 75 nations in the period 1998-2011. The accompanying factors were found to altogether influence NPL proportions: genuine GDP development, share costs, the swapping scale, and the loaning financing cost. Islamoğlu (2015) explored the impact of macroeconomic factors (public debt stock/GDP ratios and commercial loan interest rates) on Non-performing loan proportion of traded on an open market banks in Turkey. The investigation found that abatement in the business loan financing costs in the long run causes over the top credit development and along these lines, builds the nonperforming loan proportion. The fraction of NPLs was directly proportional to the GDP or the open obligation stock as it was realized that an increase in one result to the similar effect on the other.

In the Central and Eastern European nations, NPLs determinants were examined by Škarica (2014). Used tie was from quarter three 2007 to quarter three of 2012. The outcomes proposed that the essential driver of elevated amounts of NPLs was the financial stoppage, which was apparent from factually critical and monetarily huge coefficients on GDP, joblessness and the expansion rate. The determinants were explored of the fraction of NPL and the first difference of the NPL fraction was carried out for 26 economies in the period between 1998 and 2009, this was according to Nkusu (2011). The results showed that there was a compression of real GDP which was unfavorable macroeconomics improvement, rate of joblessness was high, increased financial costs, decreased house costs and value cost fall greatly thus influencing NPLs.

In Kenya, Omondi (2014) considered the impacts of inflation on commercial banks' loaning utilizing the instance of Kenya Commercial Bank Limited. The first major findings was the positive relationship between base lending and inflation rates charged by the bank, as inflation levels rises, so did the bank's base lending rate both from the key informant figures and the regression analysis of the secondary data, showed inflation's significant effect on base lending rates of the Kenya commercial banks. Secondly, it was found out that new lending volumes of KCB may get moderate effect from inflation but the rise in base lending rates has great effect on the reduction of lending volumes. Consequently, in the later findings, it was stated that increased inflation would result to higher rates of defaulting loan activities as received in the bank.

Imbuga (2014) assessed the effect of inflation on loan repayment among KCBs. In the study, he used primary data obtained from the published financial statements for a span of five years (2008-2012). The study used an ordinary least square (OLS) regression model

with the 95% confidence level and the results showed that inflation has positive significance in relation to the credit risk (r-value 0.855). According to Chege (2014), (2009-2015) was a five-year period by which the effect of interest rates on NPLs were investigated in the commercial banks in Kenya. Obtained results were presented in tables and figures for easy interpretation and understanding. Findings from the study established significant, negative and good linear relationships between banks' NPLs and interest rate; interest rate spread and total assets. Significant, positive and good linear relationships between banks' NPLs and cost income ratio; and, capital adequacy were also adduced.

2.5 Conceptual Framework

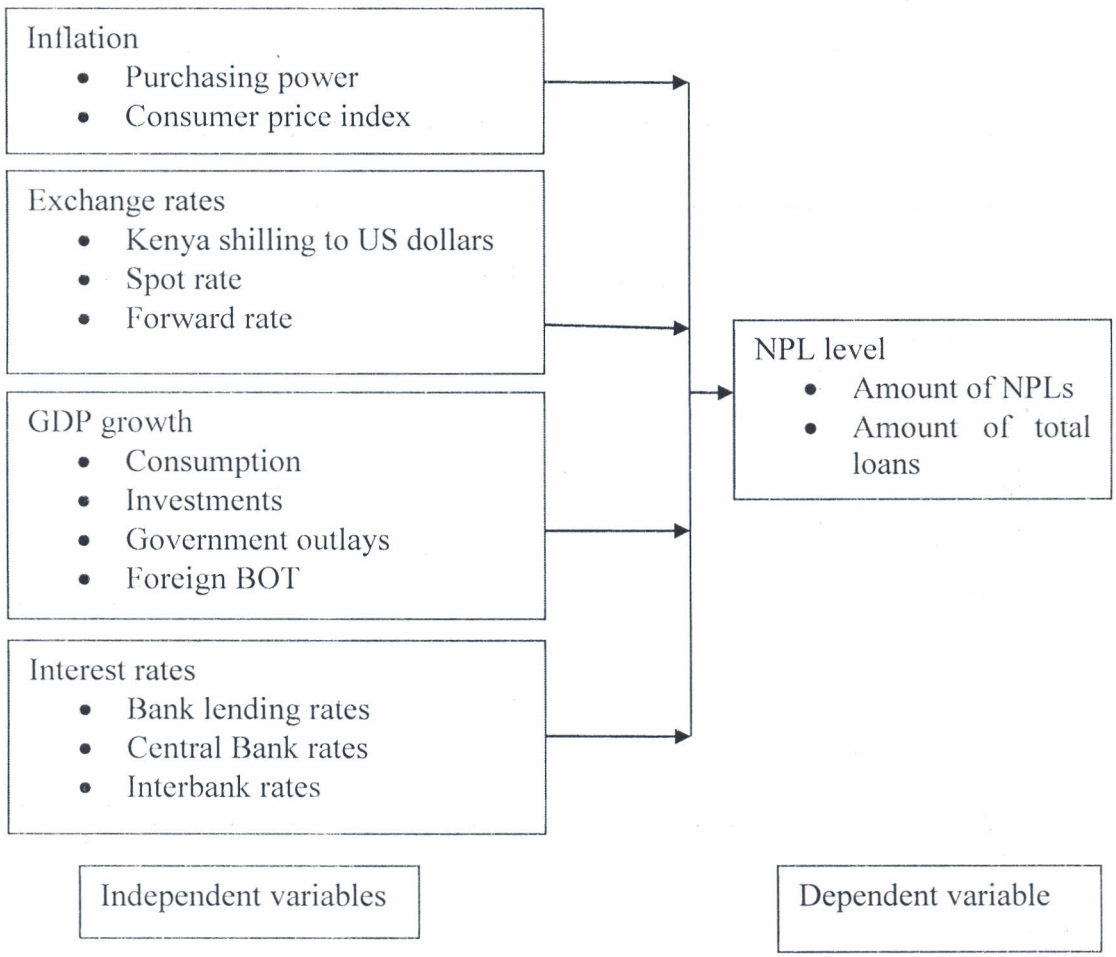

Figure 1.1: Conceptual Framework

In the credit risk appraisal process, as a rule the risk of a loan was for the most part dictated by the individual elements identified with a loan candidate, and various macroeconomic variables are utilized to clarify it (Gezu, 2014). In conditions with a lower macroeconomic risk, the heaviness of quirky risk was higher, and along these lines the part of the money related markers of credit candidates in basic leadership was more imperative. At the point when the monetary state of numerous indebted individuals was adequate, and the macroeconomic variables were not viewed as enough, events for a credit blast emerge. Trautmann and Vlahu (2013) have demonstrated that credit blasts are a portion of the best pointers of a money related emergency in budgetary markets, and they can altogether decrease the monetary steadiness. Along these lines, macroeconomic risk was fundamental for indulgent credit risk besides capital configuration choices. Precisely, defaults are more plausible in the midst of a withdrawal when they are particularly over the top and harder to hold up under. Gaiotti (2013) in like manner fights that credit exhibit inconvenience has its most incredible effects in a commerce cycle slump. The stream of the acknowledge cycle is recognized for the business cycle: the more significant in subsidence the economy, the more grounded disincentive advancing reviving operator affect in banks.

In a financial slump, high nonpayment credit rates genuinely influence loan accumulations, and this diminishes banks' capacity to loan and accordingly expands the cost of acquiring (Berrios, 2013). What's more, the monetary vulnerability about the dissolvability of different borrowers comparably builds the rate of a fixed loaning arrangement, regardless of the loan candidate's condition. Berrios (2013) contends that amid the extension period of the economy, there have a tendency to be moderately low number of NPLs, as borrowers

confront an adequate stream of salary to benefit their obligations. Notwithstanding, the suggestion was that as the blasting time frame reaches out, in the process credit was given to bring down quality account holders and consequently, when the subsidence stage sets in, NPLs increases. Inflation rate also influences firms'/individual ability to service loans. Gezu (2014) shed light on the effect of interest rate in servicing debt especially for floating rate loans. An increase in interest rate worsen debt burden as a result of increased interest payment, resulting in high number of NPLs.

2.6 Summary of Literature Review

This study was supported by financial accelerator theory and agency theory. According to the reviewed literature, various scholars such as; Islamoğlu (2015), Beck, Jakubik and Piloiu(2013) contend that the variables of macroeconomic such as the rates of interest, exchange rates of the GDP and the inflation rates have a great influence on NPLs rate by banks. Given that a number of the empirical review are from the western countries with very few local studies, this study seeks to document literature on the study topic and expand the understand of the effect of macroeconomic factors on levels of non-performing loans among Kenyan commercial banks.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter specifically looks at the research design, target population, data collection and data analysis to be adopted in the process of carrying out the study. The chapter expounds on how the researcher went about in carrying out the study and how the data was collected and analyzed.

3.2 Research Design

Experimental research design needed to be incorporated in the study with the aim of determining the relationship that exists between variables. To achieve this therefore, quantitative approach particularly from secondary sources were used.

3.3 Population of Study

The 11 listed commercial banks at the Nairobi securities exchange as at December 2018 as indicated in CMA bulletin 2018 formed the targeted population. Census was used to study all the eleven commercial banks that were studied (see appendix)

3.4 Data Collection

The researcher made use of secondary data in this study. Panel data of individual banks' balance sheets were obtained from the banks' websites and journals while macroeconomic indicators were obtained from the datasets provided by the Kenya Bureau of Statistics. Data were based on annual frequency for 2008-2017 and covers tiers one and two commercial banks in Kenya.

3.5 Data Analysis

Statistical Package for Social Science was used to analyze the collected data and represent them into tables and figures for easy understanding and interpretations. Regression analysis were applied by the researcher to identify the type of association that exist between dependent and independent variables to single out among the four independent variable the one having an effect on dependent variable on most of the listed Kenya Commercial Banks. Results from the regression analysis were presented and discussed in connection to the literature review. T-value for each variable was computed to determine if the effect was significant or not. The regression model was as follows:

$$\mathbf{Y = \beta_0 + \beta_1 CPI_{1it} + \beta_2 IR_{it} + \beta_3 lnE_{1it} + \beta_4 lnGDP_{it} + \varepsilon}$$

Y = Average NPL levels (amount of NPL divided by gross loans) at macro-economic levels

$\beta_1 CPI_{1it}$ = inflation rate as measured by consumer price index per quarter in year t

$\beta_2 IR_{it}$ = interest rate measured by the average lending rate per quarter(2008-2017)

$\beta_3 lnE_{1it}$ = Exchange rate (Ksh to US dollars) per quarter (2008-2017)

$\beta_4 lnGDP_{it}$ = GDP growth rate per quarter in year t

e = error term

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

In this chapter, findings were presented from the collected data, analyzed and interpreted. The results were represented on graphs and tables as shown below.

4.2 Check for Normality of Data

The data was subjected to various tests before the analysis to check whether it was normal so as to enable subsequent analyses.

4.2.1 Normality test for Variables in the Study

Table 4.1 below shows the Shapiro-Wilk and Kolmogrov-Smirnov tests. The tests were conducted using the quarterly averages for the Interest rate, inflation rate, GDP Growth rate, Exchange rate and non-performing loan. The Shapiro Wilk test was used and the data was found to be normally distributed because the p-values for Interest rate, Inflation rate and non-performing were less than 0.05 at 5% level of significance while exchange rate, and gross domestic product were greater than 0.05 at 5% level of significance.

Table 4. 1: Shapiro-Wilk Test for Normality for Macro-economic variables

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Interest rate	.201	40	.000	.878	40	.000
Exchange rate	.129	40	.090	.946	40	.056
Inflation rate	.209	40	.000	.864	40	.000
GDP	.113	40	.200*	.954	40	.104
NPL	.205	40	.000	.891	40	.001

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

4.3 Descriptive Statistics

This section comprises of the graphical analysis and summary statistics.

4.3.1 Non-Performing Loan Rate

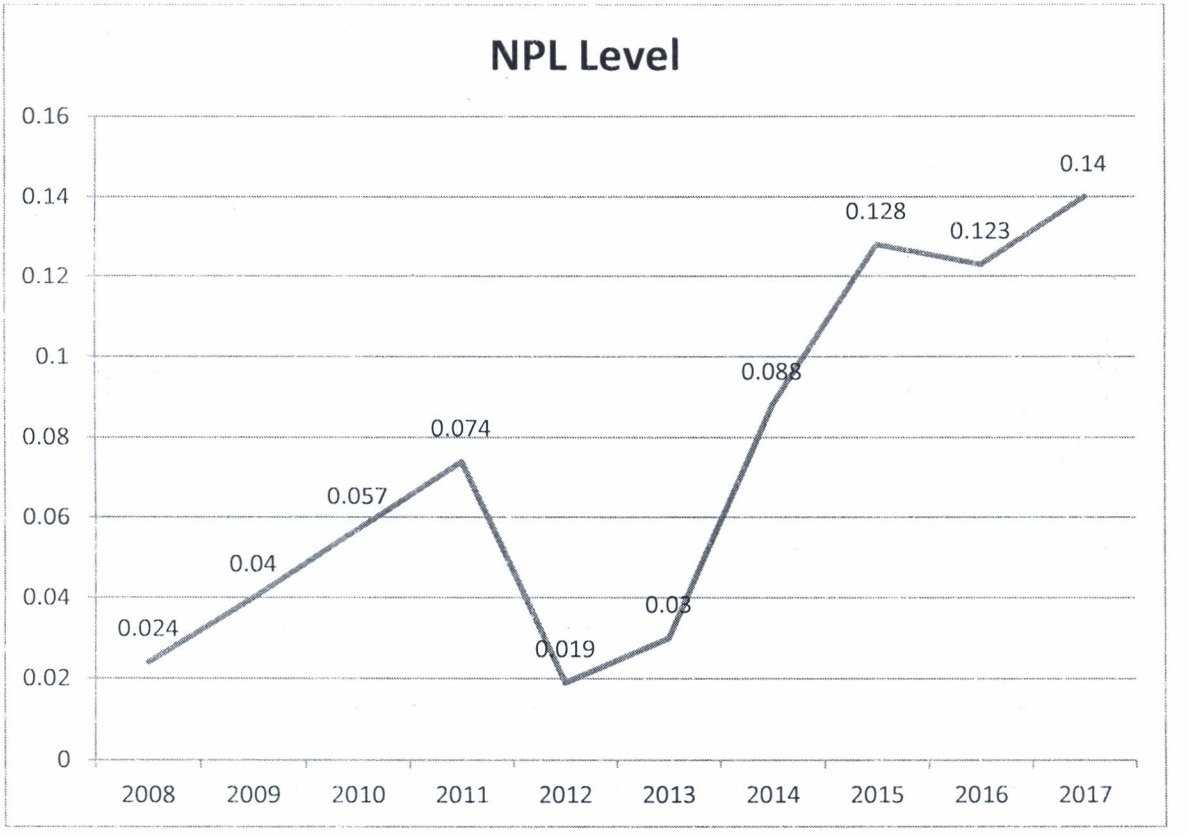

Figure 4. 1: Non-Performing Loan Rate

Figure 4.1 shows the non-performing loan trend for the period between 2007 and 2017. The figure indicated that the trend of nonperforming loans in Kenyan banks had been steadily rising over the considered period except in 2012 and 2013 where there was a significant drop respectively.

4.3.2 Inflation Rate

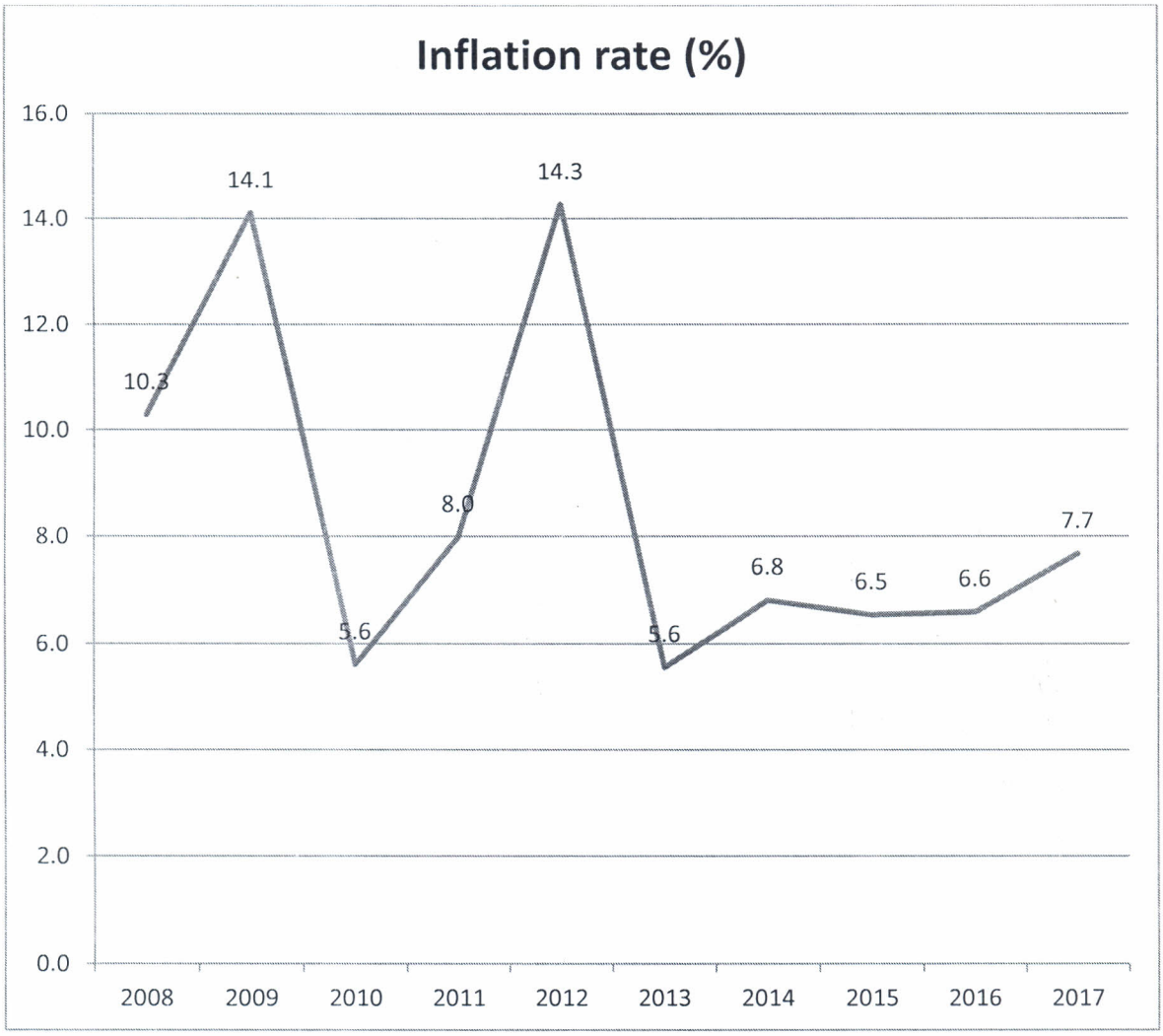

Figure 4. 2: Inflation Rate

Figure 4.2 shows the inflation rate from 2008 to 2017. The figure indicated that the consumer price index had a steep rise and drop between 2008 and 2013. 2012 had the highest inflation rate at 14.3% while 2010 and 2013 had the lowest at 5.6% respectively. The inflation rate however, showed a steady rise between the year 2013 and 2017

4.3.3 Interest Rate

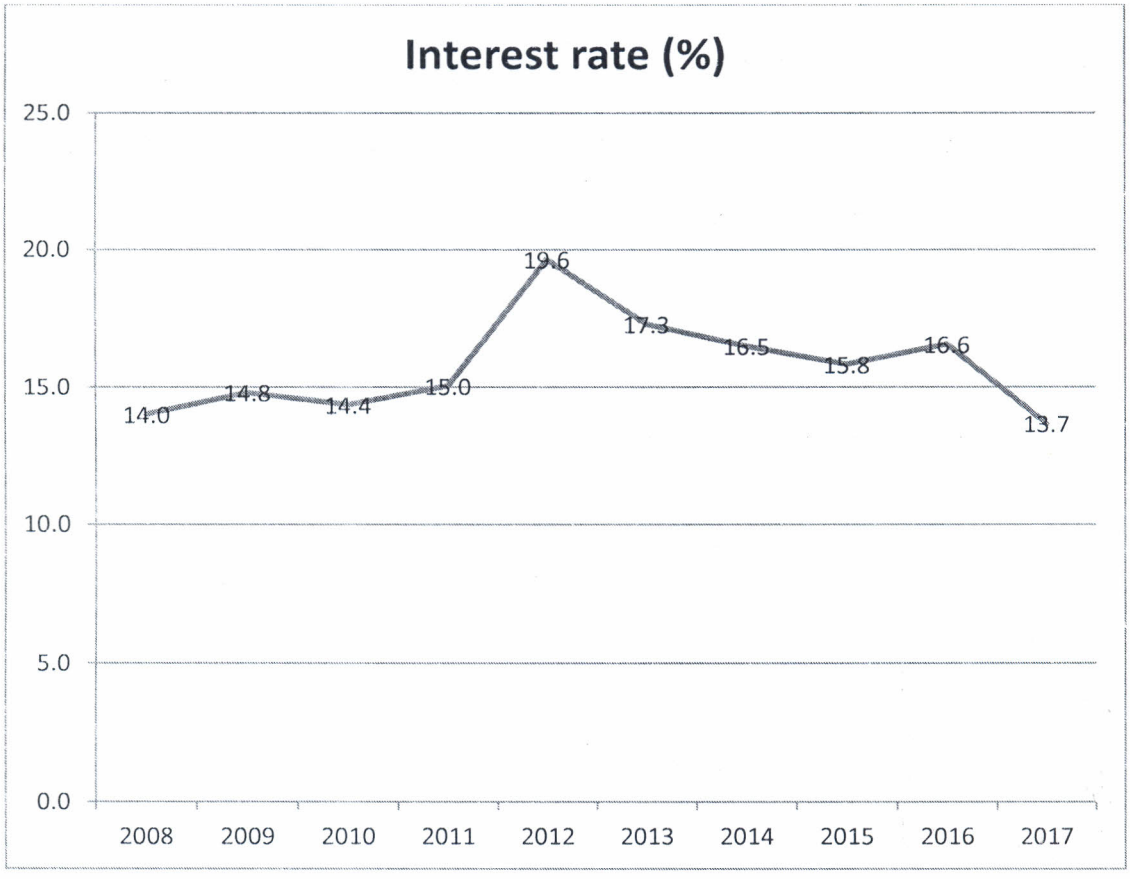

Figure 4. 3: Interest Rate

Figure 4.3 indicates a sharp increase on interest rate from 2011 to 2012. The lowest interest rate shown in the study period was seen in 2017 and the highest interest rate was recorded in 2012.During the study period the interest rate was never static, rather it fluctuated through and through. A sharp increase of 4 was witnessed between 2011 and 2012

4.3.4 Exchange Rate

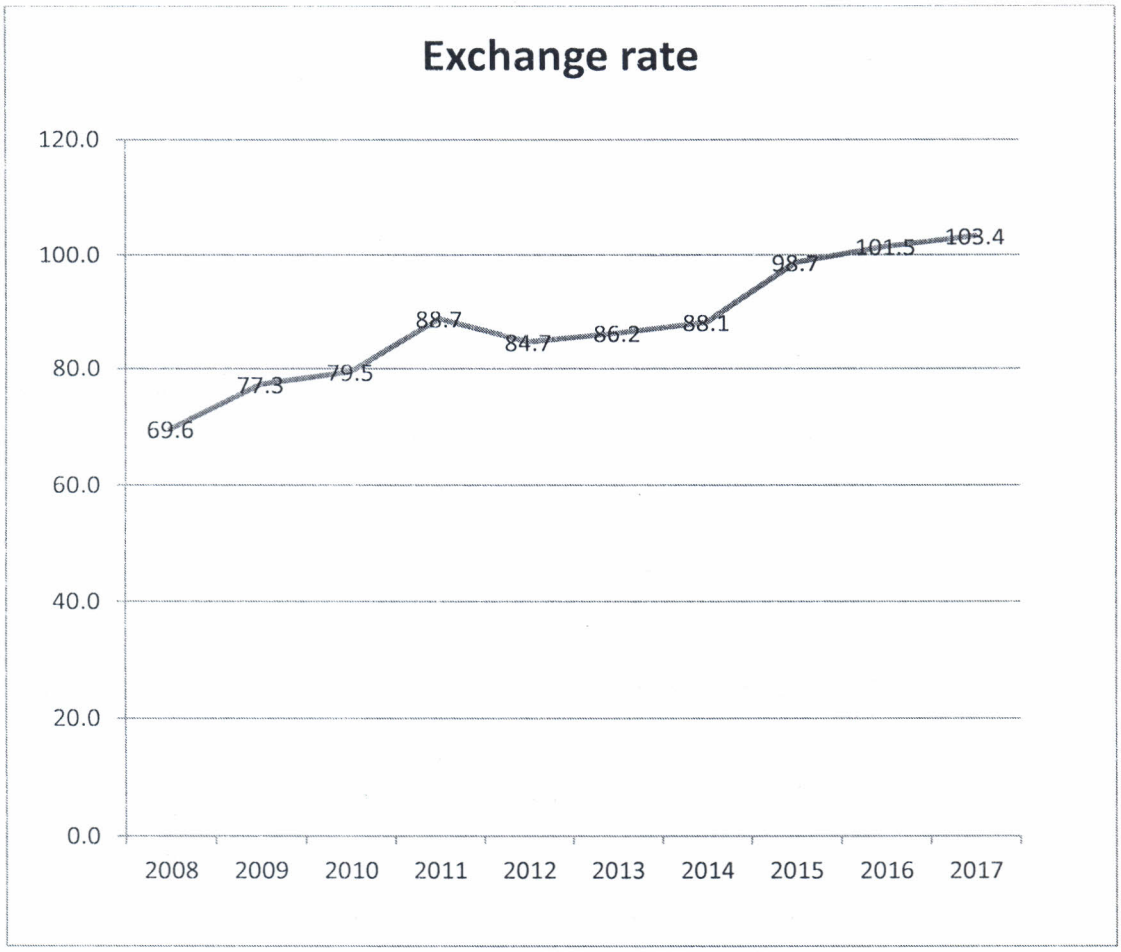

Figure 4. 4: Exchange Rate

The findings of figure 4.4 indicated that exchange rates had been on increase throughout the study period except in 2012. These depicted a stable level from each year.

4.3.5 GDP Growth Rate

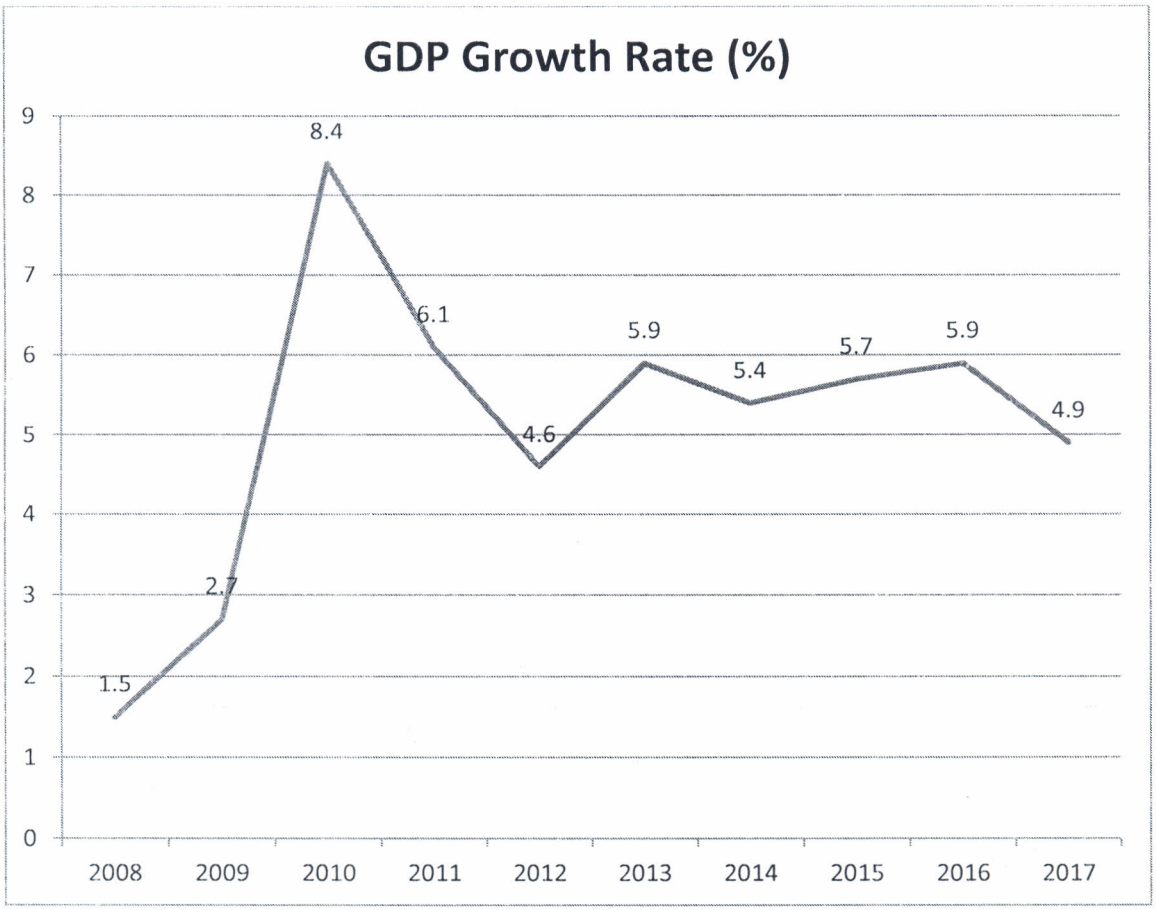

Figure 4. 5: GDP Growth Rate

Figure 4.5 shows the GDP trend from 2008 to 2017. The figure shows that the GDP was highest in 2010 and lowest in 2008. A sharp increase in GDP was recorded between 2008 and 2010 which was followed with a sharp drop in 2011 and 2012. Generally, the GDP has never been stable and keeps fluctuating every year.

4.4 Correlation Analysis

The study sought to determine the correlation analysis. This section discusses the tests of multicollinearity, tests of homogeneity of variances and the correlation matrix. The results from the analysis are illustrated below.

4.4.1 Tests of Multicollinearity

Tolerance and Variance Inflation Factor tests were conducted on the independent variables to test for multicollinearity. A tolerance value of less than 0.1 indicates multicollinearity. The results indicate a tolerance level of . .970, .817, .875 and .920 for interest rate, exchange rate, inflation rate, GDP growth rate respectively hence no multicollinearity.

A VIF of 10 indicates multicollinearity. The results obtained show VIF levels of 1.031, 1.224, 1.143 and 1.086 for interest rate, exchange rate, inflation rate, GDP growth rate respectively. The Researcher noted that all the independent variables had a VIF greater than 1 but less than 10 therefore there was no multicollinearity amongst the variables.

Table 4. 2: Tolerance and VIF Tests

Model		Collinearity Statistics	
		Tolerance	VIF
1	Interest rate	.970	1.031
	Exchange rate	.817	1.224
	Inflation rate	.875	1.143
	GDP	.920	1.086

a. Dependent Variable: NPL

4.4.2 Correlation Matrix

Pearsons correlations analysis was conducted to determine the correlation amongst the variables. The analysis was undertaken at 95% confidence interval and a confidence level

of 0.05 (2-tailed). The correlation coefficient indicates the strength of the relationships amongst the variables.

Table 4. 3: Correlation Matrix

		NPL	Interest rate	Exchange rate	Inflation rate	GDP
NPL	Pearson Correlation	1	.034	.872**	-.478**	.339*
	Sig. (2-tailed)		.833	.000	.002	.032
	N		40	40	40	40
Interest rate	Pearson Correlation		1	.099	-.069	-.113
	Sig. (2-tailed)			.543	.674	.486
	N			40	40	40
Exchange rate	Pearson Correlation			1	-.344*	.233
	Sig. (2-tailed)				.030	.148
	N				40	40
Inflation rate	Pearson Correlation				1	.001
	Sig. (2-tailed)					.996
	N					40
GDP	Pearson Correlation					1
	Sig. (2-tailed)					
	N					

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The correlation between interest rate and non-performing loan is positively insignificant with a correlation value of 0.034.. This implies that an increase in interest rate will result to an increase in non-performing loan. The correlation between exchange rate and non-performing loan is positive with a value 0.872. The correlation between GDP growth rate and non-performing loan is positive with a value 0.339. Finally, the correlation between Inflation and non-performing loan is negative with a value of -0.478 implying that an increase in inflation leads to a reduction in the level of non-performing loan among

commercial banks in Kenya. However, there was insignificant relationship between Non-performing loans and interest rate as indicated by significant level of >0.05 while exchange rate, inflation rate and GDP growth rate showed significant correlation with Non-performing loans.

4.5 Regression Analysis

4.5.1 Model Summary

Table 4. 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.907[a]	.822	.802	.18296

a. Predictors: (Constant), GDP, Inflation rate, Interest rate, Exchange rate

The above table 4.4 gives the model from where the equation that could fit the data was obtained. From the table, a positive correlation existed as shown by the correlation coefficient value i.e. (r=0.907) between the dependent and independent variables. Majority of data points represented by 80.2% were represented and explained by the model with the effects from GDP Growth rate, inflation rate, interest rate, and exchange rate. From these results therefore, the undetailed factors in this research to the non-performing loan was 19.8%. This therefore makes it open for other research to be conducted to look into details for other factors whose effects are 19.8% to the non-performing loans among Kenyan commercial banks.

4.5.2 ANOVA Results

ANOVA statistics was computed to determine how significant the selected regression model was in predicting the relationship that existed between the factors under investigation. The results obtained are shown in Table 4.5 below.

Table 4. 5: ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.414	4	1.354	40.437	.000[b]
	Residual	1.172	35	.033		
	Total	6.586	39			

a. Dependent Variable: NPL
b. Predictors: (Constant), GDP, Inflation rate, Interest rate, Exchange rate

The F critical value at 5% level of significance is 40.437. The F calculated was 2.69. The F calculated of 2.69 is greater than the F critical value of 40.437which implied that the overall model was significant. The p value for significance was 0.000 which is less than 0.05. The relationship that existed between the independent and non-performing loans of commercial banks in Kenya was therefore statistically significant.

4.5.3 Regression Coefficients

Table 4. 6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.960	.347		11.428	.000
	Interest rate	-.008	.015	-.038	-.531	.599
	Exchange rate	.028	.003	.764	9.685	.000
	Inflation rate	-.020	.007	-.219	-2.868	.007
	GDP	.035	.016	.157	2.110	.042

a. Dependent Variable: NPL

From the regression model obtained above, holding all other factors constant, non-performing loan among commercial banks in Kenya would be 3.960. In addition, it means that when interest rate increases by one unit, non-performing loan decreases by 0.008 units. When exchange rate increases by one unit, non-performing loan increases by 0.028 units. Also, when inflation increases by one unit, non-performing loan reduces by 0.020 units and finally, when GDP growth rate increases by one unit, non-performing loan increases by 0.035 units.

4.6 Interpretation of the Findings and discussion of results

From the regression results, there was positive statistically significant relationship between exchange rate, inflation rate and GDP and non-performing loan since there statistical significance was less than 0.05. However, there was insignificant relationship between interest rate and non-performing loan. The findings are in agreement with Chege's (2014) findings that banks' NPLs and interest rate had negative and good linear relationships.

The findings obtained that the inflation rate had a significant negative relationship with the non-performing loan. This indicated that an increase in inflation rate leads to a decrease in nonperforming loan. This is against Omondi's (2014) results of positive relationship between inflation rate and the base lending rate charged by the banks. He found that as inflation levels rises, so did the bank's base lending. The results however agrees with Khemraj and Pasha (2009) who established that increase in inflation rates results to decreased credit reimbursement rates.

The findings revealed that non-performing loan ratio had a significant positive relationship with exchange rates. This was an indication that exchange rates fluctuations affect the level of nonperforming loans in the Kenya commercial banks. However, a study by Badar and Javid (2013) indicated that with regards to exchange rates, the relationship depends on the level foreign exchange denominated loans to unhedged clients which may be adverse in economies with pegged or managed system of exchange rates.

Furthermore, there was a significant positive association between non-performing loans and the gross domestic product growth rate. From this therefore, it can be seen that when GDP increases, the level of non-performing loans also increase among commercial banks and vice versa. However, Islamoğlu (2015) revealed that non-performing loans vary inversely with the gross domestic product growth rate. Škarica (2014) also established that the main reason of the high NPLs level was the slow-down of an economy, which was demonstrable through large coefficients of gross domestic product and inflation.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter gives the summary of the findings and results of this study. Conclusion and recommendations are also some sub-sections that were covered in this chapter. In addition to that, the study suggested some of the areas that need further research.

5.2 Summary of Findings

The objective of this study was to determine the effects of selected macroeconomic factors on the non-performing loans in the Kenyan commercial banks listed by the Nairobi Securities exchange in kenya. Non-performing loans was treated in this study as dependent variable that received effects from other macroeconomic factors such as the gross domestic product (GDP), exchange rates and inflation as independent variables. Data that was used in this study to support its validity were secondary data which were leveraged using descriptive statistics and other inferential statistics such as the correlation analysis and regression analysis. Below is the summary of the findings in accordance with the specific objectives:

The first objective was to determine the effect of inflation rate on the non-performing loan among commercial banks in Kenya. From the trend analysis, inflation rate had sharp fluctuation with the lowest rate at 5.6 in 2010 and 2013 and highest rate in 2012. The study also established that inflation rate had a significant negative effect on the non-performing loan among commercial banks in Kenya. This implied that an increase in the rate of inflation decreased the non-performing loan ration.

The second objective was to examine the impact of interest rate on the non-performing loan among commercial banks in Kenya. The study established that interest rates had an insignificant negative effect on the non-performing loan among commercial banks in Kenya. This implied that an increase in the rate of interest decreased the number of loans being given out to customers, hence lower non-performing loan.

The study also sought to determine the effect of exchange rate on the non-performing loan among commercial banks in Kenya. From the findings, it was established that exchange rate had a significant positive effect on the non-performing loan among commercial banks in Kenya.

The study finally sought to examine the impact of GDP growth rate on the non-performing loan among commercial banks in Kenya. The study established that GDP growth rate had a positive effect on the non-performing loan among commercial banks in Kenya.

5.3 Conclusions

The findings indicated that the objective of the study was achieved. The coefficients that corresponded to inflation rate and interest rates were negative which showed that a negative relationship existed between inflation rate, interest rates and non-performing loans. The study also confirmed that an increase in GDP and exchange rate lead to an increase in the number of non-performing loan among commercial banks in Kenya.

The ANOVA statistics indicated a smaller p- value of 0.000 than $\alpha = 0.05$ while the F calculated of 40.437 was greater than the F critical value of 2.69. This showed that there was a significant relationship that existed between the macroeconomic factors and the non-performing loan among commercial banks in Kenya. The p- values of the interest rate was greater than $\alpha = 0.05$ hence was found to be statistically insignificant individually while

those of exchange rate, inflation rate, and GDP growth rate were less than 0.05 therefore were found to be statistically significant individually in predicting the relationship of the variables.

This model could therefore be explained as the level non-performing loan among commercial banks in Kenya was influenced by exchange rate, inflation rate and GDP. Interest rate was insignificant and therefore, did not form part of the model.

5.4 Recommendations

The study recommends that the Central Bank of Kenya and other regulators in the market should put in place policies that will ensure control of macro-economic variables such as inflation rate, interest rate, exchange rate through various monetary and fiscal policies so as to moderate the volatility being experienced in the economy.

The study recommends that for a great economic growth, Central Bank of Kenya and other regulators in the market should mainstream these microeconomic variables for a better performing, structurally viable and for effective decision-making of the economy as a whole, rather than individual markets. These variables affect national income, output, consumption, unemployment, inflation, savings, investment, international trade and international finance.

The control of interest rates would help in the reduction of the cost of borrowing which would motivate investors to borrow money from commercial banks. Investors will thus find it affordable to repay the loans in times thus, reduction in the level of non-performing loans.

The study also recommends that policy makers should enact policies that will lower the inflation rates in Kenya as found out in the study that inflation rates influences the

purchasing power of citizens and they are likely not to go for bank loans hence a reduction in the level of lending which in turn affects the loan book.

The study findings established that exchange rates are high in Kenya and were on increase. This implied that the Kenyan shilling was losing value against foreign currencies. This study therefore recommends that the policy makers should come up with policies that will contribute to lowering the exchange rates in Kenya and contribution to reversing this trend to ease the burden that is likely to be incurred by the bank borrowers.

5.5 Limitations of the Study

This study considered a few selected macroeconomic variables among them interest rates, GDP growth, exchange rates, and inflation but there are other macroeconomic factors like oil prices, money supply, foreign direct investments, unemployment, national income and many others. The findings of the study were thus based on the explored macro-economic factors.

The study also focused on the Kenya's commercial banks however; there are other financial institutions like microfinance banks, credit only microfinance's, savings and cooperatives credit societies, insurance firms and others financial institutions. The findings therefore were generalized to the Kenyan commercial banks and not the other types of financial institutions.

The data used in this study covered a period of 2008 to 2017 and was limited to that period of study. The findings generated from this study included only the period mentioned.

The study accounted for macroeconomic factors which only covered 82.8% . The study therefore did not include microeconomic or bank specific factors.

5.6 Suggestion for Further Research

This study focused on interest rates, GDP growth, exchange rates and inflation but there are a variety of other macroeconomic factors. The study thus recommends an additional study using other macroeconomic factors among them oil prices, foreign direct investments, unemployment and national income.

The study also recommended a similar study based on the other types of financial institutions like pension firms, mutual funds, insurance firms and microfinance institutions.

Finally, the study also suggested an additional study on the effect of micro-economic factors on non-performing loans among banks in Kenya.

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APPENDICES

Appendix 1: Commercial Banks in Kenya

1. Barclays bank
2. Commercial Bank of Africa
3. Co-Operative Bank
4. DTB bank
5. Equity bank
6. HF group
7. KCB bank
8. National bank
9. NIC bank
10. Stanbic bank
11. Standard chartered bank

Appendix 2: Data Collection Sheet

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
NPL											
inflation rate (consumer price index)											
Interest rate											
Exchange rate											
GDP growth rate											

Appendix 3: Research Data (Quartely Data)

Year	Quarters	Interest rate (bank lending rate)	Exchange rate	Inflation rate	GDP Growth rate	Average NPL
2008	Q1	13.89	67.46	10.50	0.20	4875625
	Q2	13.99	62.95	17.40	10.20	4509025
	Q3	13.89	69.76	15.90	6.50	3944756
	Q4	14.47	69.06	16.60	2.60	3694306
2009	Q1	14.47	79.89	14.1	5.50	3651588
	Q2	14.88	78.06	10.60	1.50	3861704
	Q3	14.76	75.95	9.80	6.50	3661863
	Q4	14.79	77.43	8.00	2.00	3440815
2010	Q1	14.92	76.70	5.50	4.20	3359912
	Q2	14.55	79.64	3.70	1.30	3736523
	Q3	14.55	80.69	3.30	3.90	3471705
	Q4	13.89	79.38	3.80	3.80	3257930
2011	Q1	13.96	82.21	7.00	3.80	3070030
	Q2	13.90	86.33	13.20	0.60	2801924
	Q3	14.41	94.85	16.50	4.40	2737360
	Q4	17.92	88.54	19.20	2.70	2903415
2012	Q1	20.05	83.54	16.90	2.60	2759997
	Q2	20.21	84.76	11.80	2.20	980890.6
	Q3	20.00	84.61	6.40	3.80	1029816
	Q4	18.32	84.58	3.50	2.70	1446483
2013	Q1	17.70	85.71	4.10	3.70	1839174

	Q2	17.43	84.98	4.40	3.80	2093106
	Q3	16.94	87.17	7.00	3.60	2787124
	Q4	19.96	86.15	7.40	4.40	2791805
2014	Q1	17.00	86.33	5.60	4.60	3723104
	Q2	16.67	87.43	7.00	4.50	3459184
	Q3	16.40	88.49	3.80	3.90	3505405
	Q4	15.97	87.94	3.50	5.20	3350845
2015	Q1	14.60	91.81	4.81	4.90	3746243
	Q2	15.30	97.01	6.99	5.50	7180605
	Q3	16.27	103.89	6.14	5.80	3732934
	Q4	17.17	98.47	5.35	6.00	4892706
2016	Q1	17.93	101.77	6.85	5.90	6228483
	Q2	18.15	101.02	6.60	5.90	7380314
	Q3	16.54	101.34	6.49	5.90	7583911
	Q4	13.69	101.49	6.42	5.90	7780582
2017	Q1	13.65	103.31	6.48	4.90	7577871
	Q2	13.66	103.44	7.75	4.90	7539964
	Q3	13.68	103.43	8.32	4.90	8287220
	Q4	13.68	103.39	8.15	4.90	8276859