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An evaluation of the role of information sharing in mitigating non-performing loans in Kenya's banking sector

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Declaration

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

NAOMI WANJIKU MAINA

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22nd June, 2015

Approval

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Abstract

This research was an evaluation of the role of information sharing in mitigating non-performing loans in Kenya's banking sector. Guided by five research objectives, the study established quarterly distribution trend of the non-performing loans (NPL) from 2004-2013, identified factors accounting for NPL, examined the relationships between the key factors, evaluated the effect of information sharing on NPL and proposed strategies on improving information sharing towards mitigating NPL for Kenya's banking sector. A census of 44 banks and 2 credit reference bureaus (CRBs) was undertaken using self-administered questionnaires and interviews, respectively. Descriptive statistics, factor and regression analysis were employed on the primary and secondary data collected. Limitations to the study included denied access by Central Bank of Kenya (CBK) and some commercial banks resulting in a 63% response rate. The study confirmed that information sharing practice is only one among other factors that account for NPL. The behaviour of the NPL trend in 2004-2013 was observed as affected directly or indirectly by bank lending rates, real GDP, annual overall inflation and specific provision. Three factors account for NPL behaviour – regulation, macroeconomic and bank-specific factors. In a multiple regression model bank-specific factors - bank lending rates and specific provision- have significance; macroeconomic factor overall annual inflation showed significance; real GDP showed non significance. As a bank specific factor, information sharing role is critical in mitigating NPL as it corrects the moral hazard problem of information asymmetry. All banks confirmed submitting and receiving 'full file' credit information to either of the CRBs. Negative credit information received from CRBs assists banks' decision to ration credit, demand collateral and reject loan application; while positive information guides banks' as one of several other assessment criteria required before loan approval. Strategies to improve the mechanism include expansion of borrower data captured by CRBs, CBK to promote innovation in information sharing products, quality and reliability of the data. The peculiar and contradicting behaviour of macroeconomic factors – overall annual inflation and real GDP – in affecting levels of NPL in a multiple regression model is a suggested area of further study.

Key words: Non-performing Loans, bank-specific factors, macroeconomic factors, full file information, credit information sharing

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Abbreviations

CBK Central Bank of Kenya

NPL Non-Performing Loans

MoU Memorandum of Understanding

CRB Credit Reference Bureaus

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Chapter 1: Introduction

1.1 Background to the study

The financial sector of a country is important in mobilizing savings and allocating credit while providing products to savers and investors through financial institutions such as commercial banks, cooperatives, and investment banks, insurance among others. An efficient financial sector reduces the cost and risk of producing and trading goods and services.(Herring & Santomero, 1996)

The financial health and performance of financial institutions does contribute greatly to the economic growth and development of a country, warranting regulatory scrutiny. There are several types of risks – internal and external - directly affecting the banking business financial health and performance that have to be well managed by banks. Poor performance of a bank resulting from poor risk management could cause a ripple effect of eroded depositor confidence, runs of the bank's deposits and eventual liquidity problems with contagion effect in the banking system; a catalyst for financial crisis and downturn of an economy as experienced in the USA in 2007. (Ongore & Kusa, 2013).

Credit risk is the dominant source of risk to commercial banks hence the strict regulation and oversight (Pesaran, Schuermann, Treutler , & Weiner, 2006). (Marjit & Mallick, 2004) further specify that the risk of default by borrowers is actually the fundamental risk for banking. This loan default risk increases with the degree of the asymmetric character of information.

The importance of a supervisory review process by the national supervisory authority – the Central Bank - is stressed upon (Basel Committee on Banking Supervision, 2006). This supervisory review is to ensure compliance, prevention and mitigation of all risks by commercial banks and take appropriate action at an early stage. This is done to ensure that banks have sufficient capital to support all risks in their business. However, (Herring & Santomero, 1996) point out that regulation can best be beneficial to savers, investors and lenders particularly if it can reduce cost of information gathering and monitoring by the banks as lenders.

This research aims to evaluate the role of information sharing in mitigating the non-performing loans in Kenya's banking sector.

Central Bank of Kenya (CBK) in its role as supervisor and regulator of the banking sector seeks to implement policies and standards of international best practice for the Kenyan

banking system. This is with the aim of ensuring stability, efficiency and access to financial services, and includes continuous review of the banking Act and regulations for credit reference bureaus licensed under the banking Act.

According to (Central Bank of Kenya, 2013) the overall banking sector net assets grew in 2013 by 15.9% from 2.33 trillion in December 2012 to 2.70 trillion in December,2013 owing to increased loans and advances. Gross loans increased by 18.7% from Ksh.1, 330.4 billion in December 2012 to Ksh. 1,578.8 billion in December 2013. The growth in loans is attributed to increased demand for credit by the various economic sectors. The ratio of non-performing loans to gross loans increased from 4.7 percent in December 2012 to 5.2 percent in December 2013. The increase in non-performing loans, a decline in asset quality, signalled an increase in credit risk attributed to high interest rates and the slowdown in economic activities due to the general elections in March 2013.

The distribution of the banking sector loans was as shown in Table 1.1 above, with 21% of loans and advances extended to various economic sectors while 79% were in personal/household sector. The personal/household sector accounted for over 25% of the banking sector credit and 26% of the NPLs. Trade, real estate and manufacturing sectors accounted for 47.1 percent of the sector's credit and 44.9 percent of NPLs. (Central Bank of Kenya, 2013).

Table 1 1: Sectoral Distribution of Loan Accounts, Gross Loans and NPLs - December 2013

Sectors	No. of Loan Accounts	% of Total	Gross Loans (Ksh/Millions)	% of Total	Gross NPLs (Ksh/Millions)	% of Total
Agriculture	130,211	4.20%	68,926	4.40%	5,588	6.80%
Manufacturing	24,442	0.80%	204,131	12.90%	5,580	6.80%
Building and Construction	13,460	0.40%	72,406	4.60%	6,185	7.60%
Mining and Quarrying	1,753	0.10%	16,322	1.00%	482	0.60%
Energy and Water	5,971	0.20%	66,190	4.20%	1,118	1.40%
Trade	356,434	11.50%	316,707	20.10%	20,236	24.70%
Tourism, Restaurant and Hotels	8,464	0.30%	37,956	2.40%	2,610	3.20%
Transport and Communication	37,950	1.20%	108,831	6.90%	6,435	7.90%
Real Estate	51,859	1.70%	222,735	14.10%	10,998	13.40%
Financial Services	17,185	0.60%	56,397	3.60%	1,361	1.70%
Personal/Household	2,448,548	79.10%	408,168	25.90%	21,266	26.00%
TOTAL	**3,096,277**	**100%**	**1,578,769**	**100%**	**81,859**	**100%**

Source: CBK,Bank Supervision Annual Report 2013

According to (World Bank, 2014), regulatory reforms can have important positive spill over effects in the economy. In *doing business*, better regulation is strongly correlated with better perceptions of the quality of the business environment in an economy.

In July 2010 as part of reforms, CBK rolled out a credit information mechanism in the banking sector, aimed at promoting access to affordable credit to members of the public. Two credit reference bureaus (CRBs) are licensed to date. In 2013, CBK reviewed and revised the CRB regulations to allow commercial banks and microfinance banks to share positive and negative – full file - credit information effective 2014. CBK cited the need for alternative reliable collateral technology such as credit history, for better assessment and decision making in a fast growing financial sector with high demand for credit. (Government of Kenya , 2013).

By December 2013, usage of the mechanism in requesting for credit reports by banks and customers had grown to a total of 3.5 million by banks and 55,094 by customers. The credit reports requested by banks had an increase of 25.6% from 1,015,327 in 2012 to 1,275,522 in 2013 while requests made by customers increased by 16.2% from 22,692 to 26,361 over the same period. (Central Bank of Kenya, 2013).

This study therefore seeks to evaluate the role of information sharing in mitigating non-performing loans in Kenya's banking sector.

1.2 Problem definition

The role of and access to credit in an economy cannot be overstated as a key driver to economic development. The financial sector is a focal point in the allocation of credit. Getting credit is a key *doing business* indicator that assesses the legal rights of borrowers and lenders in secured transactions (that is, laws that protect borrowers and lenders to facilitate lending) and the sharing of credit information. In addition is the depth of credit information index which focuses on the coverage, scope and accessibility of credit information available through credit bureaus and registries. World Bank's 2013 World Development indicators show that Kenya's score for depth of credit information index was zero (0) on a 0-8 scoring, while strength of legal rights index was strong at seven (7) on a 0-12 scoring.

Further, (World Bank, 2014) continues to state that better access to credit for the private sector can only occur where the legal framework provides stronger protection of secured creditors' rights and credit reporting systems provide more relevant, reliable, timely and sufficient data.

In improving credit information systems, in 2013 Kenya strengthened its regulatory framework for credit reporting by issuing new regulations which allowed the exchange of positive credit information and establishing guidelines for data retention. (World Bank, 2014)

By 2013 in Kenya, there was an increased usage of CRB information from the increased credit report requests. (Central Bank of Kenya, 2013). It is also in 2013 that the ratio of non-performing loans to gross loans increased to 5.2% from 4.7 percent in December 2012.

This research therefore sought to evaluate the role of information sharing in mitigating non-performing loans for Kenya's banking sector. This entailed understanding the distribution trend of the non-performing loans in the past ten years, establishing factors accounting for non-performing loans, examining the relationships between the key factors accounting for non-performing loans, evaluating the effect of information sharing and proposing strategies on improving information sharing towards mitigating non-performing loans for Kenya's banking sector.

The research was guided by the following research objectives and research questions;

1.3 Research objectives

i) To establish a 10-year distribution trend of non-performing loans in Kenya's banking sector with the introduction of credit reference bureau regulation
ii) To identify the key factors accounting for non-performing loans in Kenya's banking sector
iii) To examine the relationship between non-performing loans and key factors accounting for non-performing loans
iv) To evaluate the role of information sharing on non-performing loans in Kenya's banking sector
v) To propose strategies on improving information sharing that can mitigate non-performing loans in Kenya's banking sector

1.4 Research questions

i) What is the last 10-year distribution trend of non-performing loans in Kenya's banking sector with the introduction of credit reference bureau regulation?
ii) What are the key factors accounting for non-performing loans in Kenya's banking sector?
iii) What is the relationship between non-performing loans and key factors accounting for non-performing loans?

iv) How effective is information sharing in mitigating non- performing loans in Kenya's banking sector?

v) What strategies can be proposed to improve information sharing towards mitigating non-performing loans in Kenya's banking sector?

1.5 Scope of the study

This study focused on the banking sector in Kenya. The study sought to understand the trend of the non-performing loans for the banking sector in the past 10 years (2004-2013). In addition, the research sought to identify key factors that account for non-performing loans and the relationship between these key factors, while evaluating the role of information sharing and proposing strategies to improve information sharing in mitigating non-performing loans in Kenya. The non-performing loans encompassed quarterly distribution of loans for Kenya's banking sector from Central Bank of Kenya.

1.6 Significance of the study

This study was useful in understanding the role of information sharing in mitigating non-performing loans and proposing strategies on improving information sharing for the credit market while identifying key factors affecting levels of non-performing loans in Kenya's banking sector and the relationship between these factors.

This study will contribute to ongoing discourse on the importance of credit information for bank supervision, lending and borrowing towards economic stability. Further the study will complement the knowledge of other studies already undertaken on the role and impact of credit reference bureaus and information sharing on access to credit in Kenya and on commercial banks' profitability.

Chapter 2: Literature Review

2.1 Introduction

Following the 2007 financial crisis (Basel Committe on Banking Supervision, 2012) highlighted the need for banking supervisory bodies to identify, assess and address risks in a broad system context and not limited to the balance sheet of individual banks given the complementary nature of the macro-prudential elements - business trends and sector-wide risks - and micro-prudential elements. This would allow for better pre-emptive intervention in partnership with other relevant authorities and overall effective supervision of commercial banks.

According to (Basel Committee on Banking Supervision, 2014) an effective supervisory review process requires a risk-based approach with forward-looking aspects. For example, for the on-site examination approach, (Basel Committe on Banking Supervision, 2012) spells out principles for prudential regulations and requirements which include among others, capital adequacy, problem assets provisions and reserves, credit risk, liquidity risk, disclosure and transparency. These principles are used by scholars as proxy indicators for banks' performance under the CAMEL framework. (Ongore & Kusa, 2013). CAMELS ratings are the result of the Uniform Financial Institutions Rating System, the internal rating system used by regulators for assessing financial institutions on a uniform basis and identifying those institutions requiring special supervisory attention. CAMELS stands for Capital Adequacy, Asset Quality, Management Efficiency, Earnings Ability and Liquidity(Ongore & Kusa, 2013) and Sensitivity to market risks.

The Federal Deposit Insurance Cooperation defines CAMELS framework as *Capital Adequacy*- the minimum capital threshold an institution must maintain commensurate with the nature and extent of its risks; *Asset Quality*- reflecting the quantity of existing and potential credit risk associated with the loan and investment portfolios as well as the ability of management to identify, measure, monitor, and control credit risk; *Management Efficiency*- the capability of the board of directors and management, to identify, measure, monitor, and control the risks of an institution's activities and soundness; *Earnings Ability*- the quantity and quality of earnings, their trends and sustainability; *Liquidity*- rates the banks' ability to maintain a level of liquidity sufficient to meet its financial obligations and react to adverse market conditions; *Sensitivity to Market Risk*- the degree to which changes in interest rates, foreign exchange rates, commodity or equity prices, can adversely affect a financial institution's earnings or economic capital, as well as management's capability on risk management.

The six different components are rated on a score of 1 to 5, with a score of 1 representing a sound financial institution and practices while a score of 5 reflects imminent threat to the institution and hence a high supervisory concern.

This research looks into the role of information sharing in mitigating NPL for Kenya's banking sector and will therefore focus on the *asset quality* component of CAMELS.

2.2 Asset Quality: The burden of Non-Performing Loans

According to (Kaur, 2010), asset quality refers to the degree of financial strength and risk in a bank's assets, that is, loans and investments which reflect the financial health and viability of a bank. Bank loans are major income generating assets; hence the quality of a loan portfolio heavily contributes to the profitability of banks (Ongore & Kusa, 2013). Further (Rajaraman & Vasishtha , 2002) confirm that gross non-performing assets (NPA) are a good indicator of the quality of the loan portfolio. Asset quality problems can diminish the liquidity inherent in the loan portfolio and have a negative impact on the adequacy of bank capital, decreasing access to financing while increasing lending rates which then contributes to lower credit growth in the economy as well as discouraging borrowers from investing in new projects. In addition, poor asset quality also reflects upon management competence. (Kaur, 2010). In light of this, losses derived from delinquent loans pose a high risk to the bank and keeping the NPL levels low is desirable. (Ongore & Kusa, 2013).

At the heart of the global financial crisis following a period of indiscriminate availability of cheap credit, was the abrupt rediscovery of credit risk by lenders, whose new and grave concern became the borrowers' capacity to repay debt. Vulnerability of balance sheets is heightened when financial stability is threatened by heavy debt burdens. For example, high mortgage debt and the sharp fall in house prices left many U.S. households with negative equity and raised risks to banks from mortgage defaults, as seen also in Spain and Ireland following the bursting of housing bubbles. Therefore lingering fragilities, such as that of NPL in the banking system that can amplify shocks in the financial system require urgent attention by policy makers. Incomplete policy actions and inadequate reforms of the banking sector have left segments of the global banking system vulnerable to further shocks for example, in Europe.(International Monetary Fund , 2011).

(Lee , 2002) talks of the financial crisis in Japan in the 1990s, where a series of bankruptcies of financial institutions was a reflection of the serious burden of NPL. The Japan government characteristically played a big role in forming and maintaining the financial system with bank

credit mostly allocated to industrial corporations. Japan's response to this financial crisis therefore, was to put in place a legal framework that provided for credit guarantees by the government as a special measure and restructuring of financial institutions. The credit guarantees were for the banks to dispose of NPLs and clean-up of the banks' balance sheets while fully protecting deposits. The restructuring of the financial institutions focused on resolution of the NPL problem and strengthening of the equity capital bases for sound management. A supervisory authority was then created to lead in the restructuring.

In China, according to (Shih, 2004) both state commercial banks and the policy banks dominated the financial sector in terms of capital distribution while bureaucrats in charge of China's economy acted as politicians devising strategies that give short-term fixes to pressing problems for political survival and not policies for long term economic stability. An example is in how the government dealt with the NPL problem whose level had reached between 25 and 50 per cent of all loans outstanding, or between 21 and 43 per cent of GDP at that time. The NPL and liquidity problems facing China were as a result of banks being treated as another government treasury to redundant investment projects. The Asian crisis further elevated the NPL problem. China leadership used the opportunity to fulfil political gains, in centralising authority of the financial sector while implementing reforms such as strict NPL reduction quotas in state banks, improved risk evaluation in the banking system, setting harsh targets to lower the ratio of NPLs and ordered state banks to implement responsibility systems so that managers who authorized loans could be punished with wage reduction and employment termination, among others. The government also recapitalised the banks and their NPLs written off capped at 1% per year to control the amount of NPL reflected in the budget deficit. In addition, asset management companies were set up to take over NPLs from state banks, intended to minimize explicit fiscal deficit in the short run and to defer the NPL problem to the future. This strategy creates a scenario where instead of banks bearing the burden of NPLs due to government policies, the NPL burden was transferred to the government in the form of debt. By 1998, a financial company was set up to take over asset management companies. With initial capital received from government they gave either bonds or stocks to the banks in exchange for bad debts. These financial companies were supposed to recover as many of the NPLs as possible through debt-to-equity swap, bankruptcy and restructuring debt.

Asian banks proved to be resilient to the 2007 financial crisis unlike in the late 1990s, as seen in the case of Japan and China above, when the Asian financial crisis spurred severe losses. A contributing factor to this could be attributed to changes in the regulatory environment by adopting stronger risk management and more conservative loan loss

provisioning standards with higher loan loss reserves and provisioning expense levels. (Packer & Zhu , 2012)

To reduce bank credit risks (International Monetary Fund , 2011) suggests capital buffers and measures to reduce uncertainty about asset quality including enhancing transparency of banks' balance sheets through frequent bank reporting and publication of stress-tests which means stronger supervisory scrutiny.

2.3 Factors affecting levels of non-performing loans

The level of NPL in the banking sector can be attributed to both macroeconomic conditions as well as bank specific factors. Macroeconomic conditions such as GDP growth, unemployment, exchange rates, interest rates and inflation would affect the borrower's capacity to repay their loan (Klein, 2013) while bank specific factors are influenced by internal decision of the management and the board hence affecting banks' performance (Ongore & Kusa, 2013). These can exert pressure on the banks' balance sheets to the extent of affecting banks' lending operations and undermining economic activity (Klein, 2013).

2.3.1 Macroeconomic conditions

There are various macroeconomic variables affecting banks' asset quality (Klein, 2013).
A prolonged economic recession coupled with falling per capita GDP is likely to increase the scope of default on loans, especially in the most depressed economic sectors. (Fofack, 2005). This suggests that a higher real GDP growth translates into more income thereby improving the capacity of borrowers to repay debt.(Klein, 2013). Therefore, a drop in global economic activity remains the most important risk for bank asset quality. (Beck, Jakubik, & Piloiu, 2013).

Other macroeconomic variables affecting NPL include, exchange rate depreciation which could affect asset quality negatively where there is heavy foreign currency lending to un-hedged borrowers (Beck, Jakubik, & Piloiu, 2013). Rising interest rates also affect the ability to service debt. Inflation rate may or may not affect NPL depending on whether it reduces the real value of the loan outstanding or the real value of wages (Klein, 2013). (Fofack, 2005) suggests a low correlation between NPL and inflation. NPLs are also affected by stock prices where a drop in shares prices might lead to more default via wealth effects and decline in the value of collaterals. (Klein, 2013)

In addition to economic activity, lending interest rates are a standard empirical determinant of bank asset quality. (Beck, Jakubik, & Piloiu, 2013). Some determinants of interest rates affecting bank lending rates include but are not limited to the cost of deposits, cost of doing business for banks, risk premium of the borrower and the bank's profit margin. (Central Bank of Kenya , 2013).

2.3.2 Bank level factors

According to (Klein, 2013) there are three hypotheses that can explain the bank level factors. First, is the ''bad management'' hypothesis in relation cost efficiency, arguing that low cost efficiency is a signal of poor management practices. This implies that poor loan underwriting, monitoring and control lead to increase in NPL. This is supported by (Olweny & Shipho, 2011) emphasising that profitability of a bank depends on its ability to foresee, avoid and monitor risks as part of decision making on resource allocation which would lend to covering losses brought about by risks arising, such as default risk.

Second is the "skimping" hypothesis which suggests that when banks' cost efficiencies are too high, it may imply that too little resources are allocated to monitor lending risks, subsequently leading to higher NPL in the future. Banks which fail to monitor their credit loans tend to be less profitable than those which pay particular attention to asset quality. Recommendation is therefore made to improve processes of screening credit customers and monitoring of credit risk (Olweny & Shipho, 2011) because higher quality of management leads to lower NPL (Klein, 2013).

Thirdly, (Klein, 2013) points to the "moral hazard" hypothesis arguing that banks with low capital respond to moral hazard incentives by increasing the riskiness of their loan portfolio leading to high NPL. The moral hazard problem arises as bank managers are expected to evaluate credit losses in the loan portfolio on the basis of available information - asymmetric or imperfect information (Stiglitz , 1983) . This therefore is a process involving a great deal of judgement and opposing incentives. Further, banks do under-account for losses incurred to avoid negative effects of provisions on profit and shareholder dividends or over-state loss provisions if tax deductible and smooth profits in order to reduce amount of tax liability (Laurin & Majnoni, 2003).

A strong recommendation is made by (Laurin & Majnoni, 2003) to strengthen bank supervision to prevent a sharp build-up of NPLs through avoidance of excessive lending,

maintaining high credit standards and clean-up of loan portfolios of NPLs through collective and cooperative efforts led by banks in the benefit of both the debtors and creditors.

2.3.3 Regulation

Whereas the state of the economy and the shocks affecting it define the macro-prudential setting in which banks operate, bank-specific variables are largely conditioned by the micro-prudential guidelines applicable to banks. Micro-prudential risks are reduced by an appropriate legal framework and by adequate banking supervision. (González-Hermosillo, Pazarbaşioğlu, & Billings, 1997).

Principles for prudential regulations and requirements for effective bank supervision include using the on-site examination approach for capital adequacy, problem assets provisions and reserves, credit risk, liquidity risk, disclosure and transparency. (Basel Committe on Banking Supervision, 2012)

Problem assets or loan loss provisioning is a method used by banks to recognise a reduction in the realisable value of their loans. Further, banks use loan classification to review the loan portfolio and categorise loans by perceived risk or other characteristics. Loan loss provisioning is a key aspect of bank financial reporting for regulators and outside investors interested in monitoring risk-taking behaviour. (Bushman & Williams , 2007)

While regulators provide standardised guidelines for purposes of reporting and facilitate monitoring and interbank comparisons, banks may have more complex classification systems. (Laurin & Majnoni, 2003).Rules notwithstanding, provisioning and loan classification process is often a matter of judgement of the bank manager as it captures the expectation of management with regard to the performance of loans(Olweny & Shipho, 2011), auditor or supervising body(Laurin & Majnoni, 2003).

Loan loss provisions should be positively correlated with the lending cycle, and banks should build up loan loss reserves in good times to be drawn on in bad times (Bushman & Williams , 2007). A relation can be seen between GDP growth and provisioning where banks create too little provision in in good macroeconomic times and provision during recessions, which amplifies the business cycle downturns when credit risk actually materialises.(Njoroge & Kamau, 2010).

2.4 The moral hazard problem: Asymmetric Information

According to (Stiglitz, 1983) a combination of risk and insurance with asymmetric information uncovers two major problems referred to as "adverse selection " and " moral hazard ". Adverse selection is concerned with imperfect information about the attributes or character of insurance applicants; changing the terms of the insurance contract for example, price which then affects the mix of those who purchase insurance. Moral hazard problems arise when there is imperfect information concerning the actions of those who purchase insurance, because those actions cannot be perfectly monitored and the insurance contract cannot specify all of the actions which the insured is to undertake (Hölmstrom , 1979), implying that individuals do not bear fully the consequences of their actions under the insurance provided (Stiglitz , 1983).

The fundamental conflict under the moral hazard problem according to (Stiglitz , 1983) is that the more and better insurance that is provided against some contingency, the less incentive individuals have to avoid the insured event, because the less they bear the full consequences of their actions.

The Moral hazard problems in banking can arise in the relationship between banks and the agents to whom they provide funds (Boyd, Chang , & Smith , 1998) or in risk taking induced by non-risk-based deposit insurance, coupled with regulator inability to monitor bank risk. (Lucas & McDonald, 1992).

According to (Hölmstrom , 1979), a natural remedy to the problem is to invest resources into monitoring of actions and use this information in the design of a risk-sharing contract because additional information allows for accurate judgement of the performance of the agent. Nonetheless, (Besanko & Kanatas, 1993) point out that a bank chooses its level and intensity of monitoring to maximise bank's profits given the terms of the credit contract and not necessarily the borrower's utility or for the external credit market.

(Stiglitz , 1983) further emphasizes that the risk-incentive problem arises from the presence of all three factors: risk, insurance, and imperfect information. There is commonly asymmetric information where one party to the contract (the insured) has different information from the other, and as a result, a contract which alters the terms with each change in the environment is not feasible affecting both explicit and implicit insurance contracts. This also means that, one party to the contract (the principal) is affected by the actions of the other (the agent) which he cannot control directly.

2.4.1 Lenders Information Problem

(Diamond , 1984) with reference to Schumpeter's description that …*the banker must not only know what the transaction is which he is asked to finance and how it is likely to turn out but he must also know the customer, his business and even his private habits, and get, by frequently "talking things over with him"…* refers to financial intermediaries such as banks as ''delegated monitors'' with a costly role of monitoring loans while collecting information on the borrower that serves to enforce the loan covenant.

The banks, through monitoring acquire inside-information on the borrower and are then able to directly control relevant borrower decisions (Besanko & Kanatas, 1993). According to (Aigner & Sprenkle, 1968) the more information a lender has on a particular loan, the more accurate will be its estimate of the frequency distribution of expected returns from the loan.

The fundamental risk of default by borrowers increases with the degree of assymetrical character of information (Marjit & Mallick, 2004). (Brown & Zehnder, 2007) acknowledge that in a credit market borrowers would usually have more information about themselves – character, debt history, investment opportunities - than lenders would have. This creates an adverse selection problem for lenders and potential moral hazard for borrowers.

This problem, which may prevent the efficient allocation of resources in lending (Pagano & Jappelli, 1993) has led banks to enforce various instruments and methods – contract screening, collateral, credit rationing, loan commitment with upfront fees and credit incentives, disclosure of proprietery information by borrowers which has led to 'relationship banking' - to solve this moral hazard problem (Marjit & Mallick, 2004). (Besanko & Kanatas, 1993) also support issuance of bank loans and monitoring borrower activity as a way of controlling the moral hazard problem where monitoring is expected to improve the likelihood of the borrower fulfilling his payment obligation to the bank. Yet, banks remain vulnerable to information problems since private information about loan quality is often revealed in the lending process. (Lucas & McDonald, 1992).

A suggested response to information assymetry and the costly enforcement in the credit market, is information sharing between lenders about the characteristsics and behaviour of their borrowers. (Brown & Zehnder, 2007). Lenders can improve their knowledge about borrowers by exchanging information with other lenders through brokers of information also known as ''credit bureaus''. (Pagano & Jappelli, 1993) .

2.5 Credit Information necessity

2.5.1 Commercial banks

Credit reporting service providers help in reducing information asymmetry and therefore increase access to credit. They can either be credit bureaus or credit registries. Credit bureaus aim to improve the quality and availability of data that creditors need to make informed decisions while credit registries seek mainly to support banking supervision and improving the quality and availability of data for supervised financial intermediaries. (World Bank, 2014). However, the impact of a credit bureau will strongly depend on the credit history records provided and incentive mechanisms to retrieving information. (Brown & Zehnder, 2007).

Good credit reporting systems combined with strong rule of law can be a catalyst for growth in frontier economies since many young firms and entrepreneurial ventures get better access to bank finance, reducing reliance on informal credit with steep interest rates. (World Bank, 2014)

It is suggested (Brown & Zehnder, 2007) that the presence of a credit-information-sharing mechanism can play the role of disciplining borrowers to repay loans and reduce interest rates (World Bank, 2014). However, the repayment behaviour and credit market performance is dependent on feasibility of relationship banking as an alternative disciplining device. (Brown & Zehnder, 2007)

Additional benefits of information sharing would include improving competitiveness in credit markets, efficiency in allocation of credit, increased lending volumes. (Pagano & Jappelli, 1993) as well as reducing the information advantage about borrowers of incumbent lenders over ‘’outside’’ lenders which then weakens their ability to hold-up borrowers in relationships (Brown & Zehnder, 2007) and the “informational rents” that banks could otherwise extract from their customers (Jappelli & Pagano , 2000)

2.5.2 Bank Supervision

According to (Powell, Mylenko, Miller , & Majnoni, 2004) there’s a role of the public sector in enhancing credit information sharing in the banking sector. This is achieved by compulsory enforcement by the Central Banks or supervisory authority for the provision of credit information sharing services through credit registries; a key justification being to enhance the stability of the banking system (Jappelli & Pagano , 2000).Supervised commercial banks are then expected on a regular basis to furnish the bureaus with information on borrowers, and

they usually volunteer negative information yet there is benefit in sharing both positive and negative information. (Powell, Mylenko, Miller , & Majnoni, 2004)

Among the various motivations in establishing credit information bureaus is the need for supervising authority to identify debtors, analyse risk to the sector while monitoring banks' reserve policies on problem loans. (Powell, Mylenko, Miller , & Majnoni, 2004).This means making real-time data on the lending policies of banks available to the central bank for supervision and prudential intervention (Jappelli & Pagano , 2000).

While most of European, Middle East and some North Africa countries like Egypt had set up public credit registries by the 1960s with Germany being the earliest in 1930s, the concept picked up globally in the 1990s.The registries employ a ''rating'' determined by the banks subject to the regulator's rules, usually determined by the default status and collateral available for the loan. Most credit registries were established in response to a financial crisis driven by NPL. (Powell, Mylenko, Miller , & Majnoni, 2004)

Some key advantages of credit information bureaus to bank supervision and regulation as suggested by (Powell, Mylenko, Miller , & Majnoni, 2004) include; information supports supervisory on-site and off-site responsibilities, credit rating as a tool for forward-looking provisioning policies, credit history and payment status on loans and to inform determination or amendment of regulatory rules.

2.6 Kenya

Poor asset quality driven by high NPL led to many bank failures in Kenya in the early 1980s. In the same period 37 banks collapsed following extensive 'insider' lending to politicians causing banking crises in 1986-1989, 1993-1994 and 1998. (Olweny & Shipho, 2011).

2.6.1 Commercial Banks Asset Quality

CBK (Central Bank of Kenya , 2014), restricts banks from incurring liability on behalf of or grant a person outstanding advances, credit facilities or guarantees for a total value exceeding 25% of its core capital and asserts annual submission by all banks of audited balance sheet, showing assets and liabilities in Kenya. In addition, CBK collects data and other information from banks to enable it maintain supervision and surveillance of the banks' affairs.

The CBK Annual Supervisory Report (2013) measures asset quality by the ratio of gross non-performing loans to gross loans. Further, (Central Bank of Kenya , 2013) highlights the

increase in NPLs by 32% from 61.9 billion in 2012 to Ksh 81.9 billion in 2013. The ratio of gross NPLs to gross loans rose from 4.7 percent to 5.2 percent, reflecting elevated credit risk. According to (Central Bank of Kenya , 2014) there was an increase in NPL in 2014, attributed to macro factors such as heightened insecurity and political activity, on-going reforms in some sectors hence delayed payments by government, delayed onset of long rains among other reasons. While anticipating a further increase of NPL in 2015, banks intensified the credit recovery efforts for NPL arising in 2014 to improve the overall quality of their asset portfolio.

2.6.2 Central Bank of Kenya supervision

CBK adopted the Risk Based Supervisory (RBS) approach in 2004 which focuses on understanding adequacy of an institution's risk management system and encourages interaction between an institution's management and CBK (Central Bank of Kenya , 2013). Using the CAMELS rating, CBK compiles off-site ratings of the banks on a monthly basis while on-site examinations may fall in the cycle of 6-months to 24-months, depending on the CAMELS rating and risk profile of the institutions. In addition, CBK shares information with other regulators within the framework of agreed MoUs in Kenya under the Domestic Financial Sector Regulators (CMA, IRA and RBA) in 2009, in East Africa in 2008 and other African countries including South Africa, Nigeria, Malawi and Mauritius.

Loans are the largest and most obvious source of credit risk to a bank according to (Central Bank of Kenya , 2013) who propose establishment of sound and well-defined policies, procedures and limits as vital in the management of credit risk. Credit administration therefore becomes critical to the credit portfolio, in ensuring accurate credit records are maintained and loans issued are monitored to identify early signs of irregularity, value of collateral and timely payments. In addition banks are expected to operate under sound well-defined credit granting criteria which should include understanding of the borrower, that is, the borrower's reputation, risk profile, repayment history, current capacity to repay based on historical financial trends and cash flow projections, the borrower's credit rating report from a licensed credit reference bureau, legal capacity to assume liability, purpose and structure of the credit and its source of repayment and where applicable, the adequacy and enforceability of collateral or guarantees, including under various scenarios. (Central Bank of Kenya , 2013).

CBK prudential guidelines (Central Bank of Kenya, 2013) vests on the Board of Directors of the financial institutions – as the highest policy making body of the institution – the responsibility to establish asset review systems that accurately identify risk, make provision

for NPL and disclosure of the results in the financial statements and systems that ensure interest accrued on NPL does not exceed principal owing at the point the loan becomes non-performing. This means that the Board must prescribe in writing a credit policy specifying the criteria and procedures in the evaluation, processing, approval, documentation and disbursement of credits; a system of reviewing the entire asset portfolio; a system of review of each extension or renewal of credit, identifying, and classifying troubled credits as weaknesses become evident without waiting for the scheduled periodic review; and a system for identifying loans and advances as and when they become non-performing and the outstanding balance at the time.

To facilitate an enabling environment for commercial banks to affect the credit administration policies for credit evaluation the CBK in February, 2009 operationalised the Banking (Credit Reference Bureau) regulation as part of the credit information sharing mechanism. This followed the enactment of the Finance Act, 2006 which made sharing of information on NPL mandatory (Central Bank of Kenya, 2007). (Central Bank of Kenya , 2010) further underscores the benefit of information capital and opportunity of credit information sharing in Kenya to promote access to affordable credit to more Kenyans. CBKs expectation is that there will be savings arising from the sharing of credit information translating to lower cost of credit, because information symmetry lowers risk premium and search costs usually loaded by banks to the cost of credit.

To improve robustness, in February 2014 CBK rolled out a 'full file' – both positive and negative - credit information sharing mechanism for commercial banks, microfinance banks and CRBs in Kenya and reviewed the format of data to CRBs to avert challenges faced by banks.

2.6.3 Credit Reference Bureaus

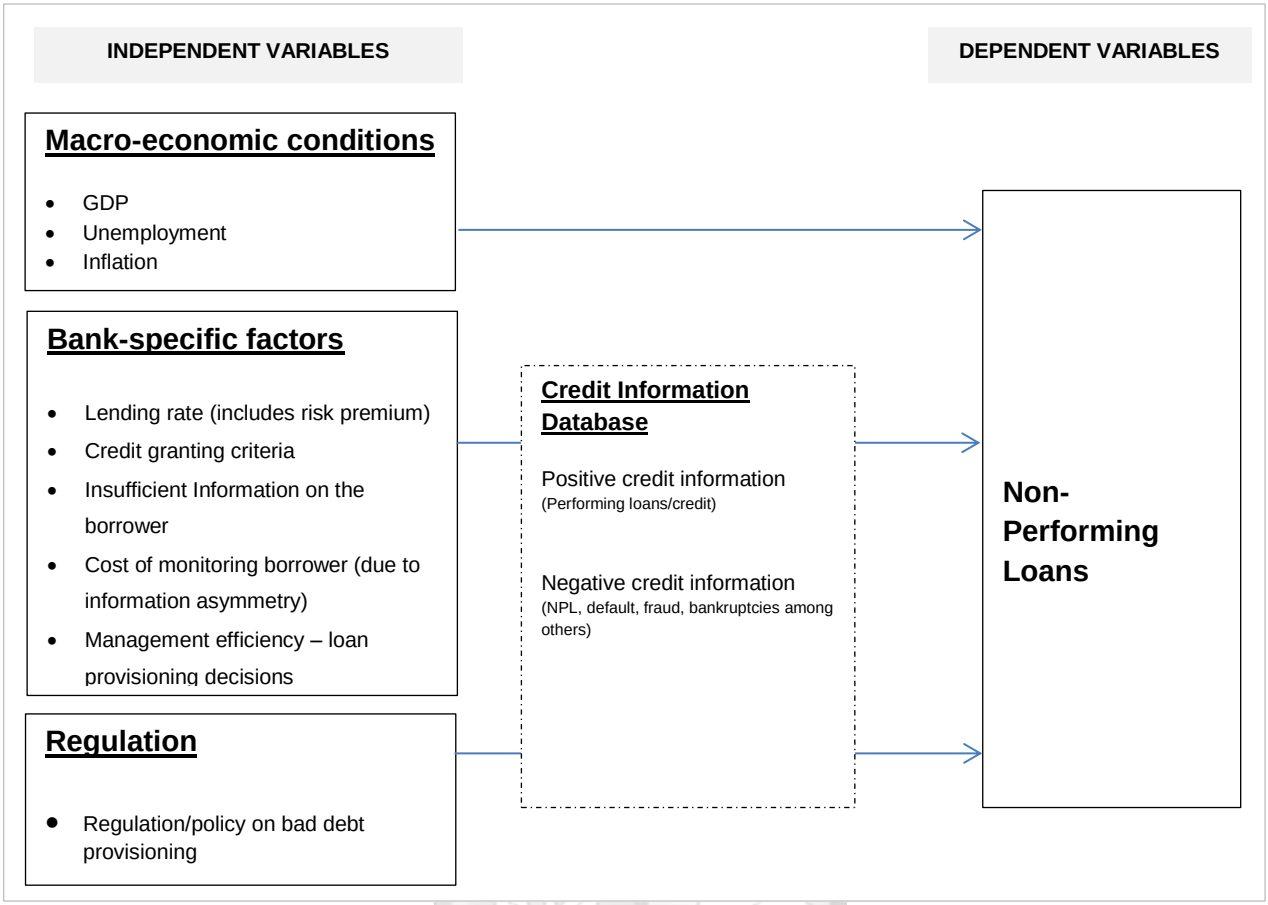
Regulation (Government of Kenya, 2008) enabled the establishment of Credit Reference Bureaus (CRB) in Kenya. There are currently 2 licensed CRBs in Kenya. CBK conducts an assessment of the applicants reputation, integrity and experience in addition to performing an on-site inspection of an applicant's capacity and capability adequacy including, premises suitability, management information system, operational processes and security of information. Applicants meeting the requirements are then issued with a license to operate under the supervision of CBK. CBK can penalise or revoke the Bureau's license in cases of non-compliance and must approve of directors appointed to the CRB board for professional and moral suitability. All information held by the Bureaus remains the property of CBK.

The CRBs obtain, store, manage customer information databases and are therefore able evaluate, generate reports and assess customer credit worthiness which they disseminate at a fee to subscribers – including commercial banks.

Using a standard agreed format (Central Bank of Kenya , 2010) and protecting confidentiality of customer information, the nature of information shared by the CRBs include negative information of NPL and positive information of performing loans ; identity, employment, profession, business and income of a customer- a consumer of financial services; credit history that is, nature of loans, amount paid and outstanding, securities; patterns of payment of credit facilities, defaulted payments, debts, restructured loan occurrence (Government of Kenya , 2014)

The CRBs are obligated to ensure all customer information is current-as and when provided by the subscribing institutions (Central Bank of Kenya , 2010), authentic, legitimate, reliable and accurate and to retain customer information on NPL for 7 years from date of final settlement of defaulted amount or discharge from bankruptcy. The institutions that furnish CRBs with customer information must update this monthly and a customer has a right to know what information the institution has submitted to the Bureau on the customer and can access their information as reports from CRBs or even dispute erroneous information about them from the Bureaus' database. (Government of Kenya, 2008)

2.7 Conceptual Framework



Source: The author

Figure 2 1:Conceptual framework - Role of Information Sharing in Mitigating Non-Performing Loans

From the conceptual framework above credit information has a role in bank-specific factors and regulation that affect the levels of NPL. The regulator in oversight of the financial system is informed for relevant policy formulation; the banks set the lending rate for their loans which factor in a risk premium on the borrower. In addition, managers screen applications before issuance of a loan contract and incur costs to monitor the borrowers to mitigate for default risk of the borrower. The credit information database therefore plays a key role in correcting the information asymmetry in the sector. It is assumed that NPL therefore can be reduced or increased for the banking sector depending on the extent of use and reference to the credit information database.

2.8 Research Hypothesis

From the review of literature and the conceptual framework above, the following research hypotheses were stated;

H01: Bank specific factors have no significant effect on NPL

H02: Macro economic factors have no significant effect on NPL

2.9 Key Concepts

Non-Performing Loans (NPL)

The World Development Indicators on financial access, stability and efficiency define NPL to total gross loans as the value of NPL divided by total value of the loan portfolio (including non-performing loans before the deduction of specific loan-loss provision). International guidelines recommend that loans be classified as nonperforming when payments of principal and interest are 90 days or more past due or when future payments are not expected to be received in full. A high ratio signals deterioration of the credit portfolio. The NPL ratio is the amount of nonperforming loans as a percent of gross loans. The study therefore defines NPL as loans delinquent in payment for more than 90 days.

Credit Risk

(Central Bank of Kenya , 2013) defines credit risk as the current or prospective risk to earnings and capital, arising from an obligor's failure to meet the terms of any contract with the bank or if an obligor otherwise fails to perform as agreed. Credit risk is inherent in the entire bank's portfolio and individual transactions. There is a relationship between credit risk and other risks. The study adopts CBK definition of credit risk.

Credit Information

According to (Government of Keny,2008) 'credit information' means any positive or negative information bearing on an individual's credit worthiness, credit standing, credit capacity, character, general reputation with regard to credit, assets and financial obligations.

Negative information means adverse customer information including that of non-performing loans, credit default, late payment on facilities, dishonouring cheques, accounts compulsorily closed, proven fraud, forgery and cheque kiting cases, false declarations and statements, receiverships, bankruptcies, liquidations, tendering of false securities, misapplication of borrowed funds. Positive information means any information on performing loans or other credit. The study adopts the CBK definition of credit positive and negative information.

Credit report

(Government of Kenya, 2008) defines a credit report as that customer information file containing a subject's credit history compiled by a Bureau and may include publicly available information. This study uses the same definition of credit report.

Chapter 3: Research Methodology

This chapter outlines the purpose and strategy for data collection and analysis. The chapter details the research design, target population and techniques used in data collection and analysis.

3.1 Research Design

The purpose of the study was to evaluate the role of information sharing in mitigating NPL for commercial banks in Kenya. The census strategy was used for all 43 commercial banks and 1 mortgage financial institution in Kenya. This strategy was most appropriate to best understand the role that information sharing has played in mitigating NPL within the financial sector given that the credit reference bureau was only operationalised in 2009 following the history of Kenya's banking sector suffering the bane of loan default.

3.2 Population and sampling

The research population for the study was all 44 licensed commercial banks and mortgage finance institution in Kenya. The institutions targeted comprised of 6 large banks, 16 medium sized banks and 22 small banks. In addition, CBK and the two Credit Reference Bureaus licensed to operate as at December, 2014, that is, Metropol Credit Reference Bureau Africa Limited and Credit Reference Bureau Africa Limited were included**.**

3.3 Data Collection Methods

The researcher collected both primary and secondary data. A mixed method research approach was applied for data collection and analysis. This allowed the researcher to combine both quantitative and qualitative data collection and analysis techniques. (Saunders , Lewis, & Thornhill, 2009)

Secondary data was collected from CBK Annual Supervisory Reports, Credit Officer Survey reports (conducted every year by CBK), Kenya Financial Sector Stability reports and Monthly Economic Review reports, a reliable source of data for re-analysis to establish the trend of NPL, real GDP, inflation, bank lending rates and banks' specific provision for NPL for the past ten years (2004-2013). This guided the descriptive analysis of the NPL trend and relationship with the macro economic conditions of real GDP and bank lending rates.

Primary data was collected using;

i) Self-administered structured questionnaires for the commercial banks to inquire on the effect of information sharing and on bank specific factors affecting NPL levels.

ii) Semi-structured interviews were also conducted using semi-structured questionnaires with senior managers at the licensed CRBs to establish the interaction of CRBs with banks. The planned semi-structured interview with CBK did not materialise, as the researcher was denied access.

Table 3 1: Number of data collection respondents

Institution	*Respondents*	*Number*
Commercial banks	*Credit managers*	*44*
CBK	Bank Supervision Manager	1
Metropol CRB	Data management officer	1
Credit Reference Bureau Africa	Data management officer	1

Source: The author

3.4 Data Analysis

The primary data collected was prepared for analysis. The preparation stage involved questionnaire checking, coding, keying the data into the spreadsheet and cleaning. The study adopted the use of MS-Excel and statistical package for social science (SPSS) and STATA computer programmes. Factor analysis was employed in determining the key factors that account for non-performing loans in Kenya's banking sector. Descriptive statistics and time series analysis was adopted in establishing a 10 year distribution trend (2004-2013) of non-performing loans in Kenya's banking sector, with introduction of CRB regulations. Regression analysis was used in evaluating the relationship between non-performing loans and the key factors – macroeconomic and bank-specific - accounting for non-performing loans. Assuming a linear relationship between the dependent and independent variables, the following regression model was estimated.

$NPL = \alpha_0 + \beta_1 BSF + \beta_2 MEF + \varepsilon$

Where;

NPL = Non-Performing Loans

α_0 = Constant related to the regression equation

β_1, β_2 = the coefficients of the independent variables

BSF = Bank specific factors

MEF = Macro economic factors

ε = error term related to the regression equation

3.5 Ethical considerations

The researcher made various ethical considerations during the research process with the aim of having respondents voluntarily participate while maintaining anonymity. When seeking access to the respondents for primary data, the researcher contacted the institutions formally via telephone and written request explaining the purpose of the study and data collection process and seeking consent for the respondents' participation and cooperation in the survey and interviews. Subsequently the questionnaires, whose language, questions and layout was simple, not intrusive and not offensive in any way, were forwarded to the respondents specifying the duration for completion and returning to the researcher. The researcher exercised care in ensuring that anonymity of all respondents and confidentiality of the data collected and analysed was maintained, by assuring the respondents on the questionnaires of the strictest confidence to be applied in handling the data collected, making the availing of personal contacts to the researcher optional and in not naming the organisations in the data analysis. In addition, all works that are not of the author have been acknowledged using the APA referencing system.

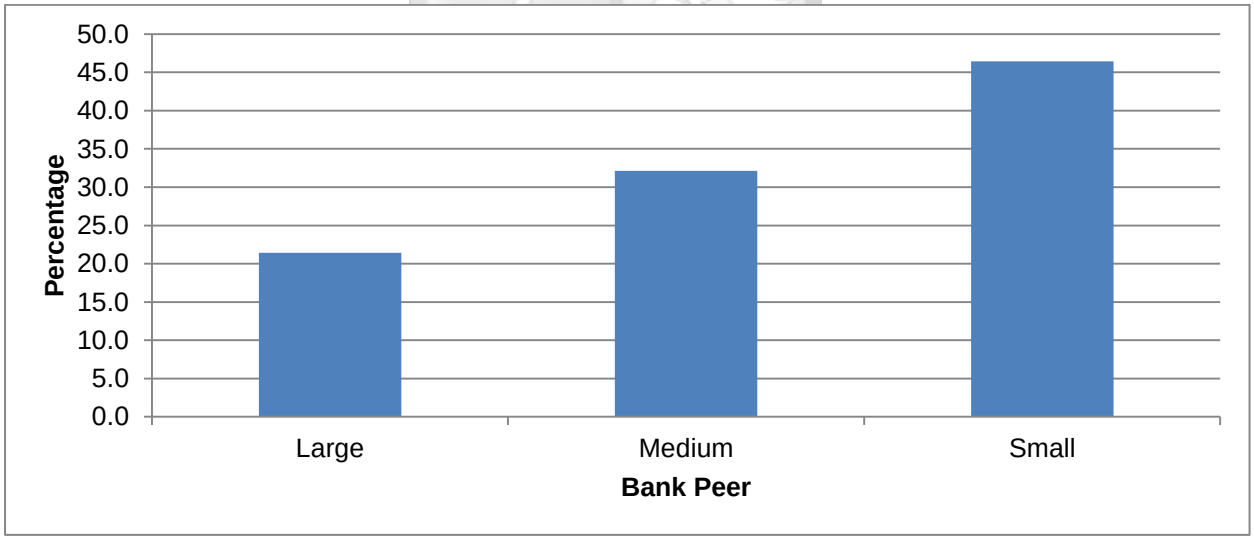
Chapter 4: Presentation of research findings

4.1 Introduction

In this chapter, the results of data analysis are presented. The study was guided by five research objectives. To address these research objectives three statistical tests were performed in the form of; descriptive statistical analysis, factor analysis and regression analysis.

4.2 Sample Profile

Kenya's banking sector comprises of 43 commercial banks and 1 mortgage financial institution. A census of the 44 financial institutions was conducted. Of the 44 questionnaires sent out, 28 responses were received, resulting in a response rate of 63.6%. This was considered adequate for analysis. Figure 4.1 below shows the banks in peers of large, medium and small banks, as categorized by CBK.[1] Majority of the banks (46.4%) fell in the small peer category, followed by the medium category (32.1%) and the large banks comprised of 21.4%. This shows that most of the banks in Kenya's banking sector are small. From the table 4.1, most of the banks (71.4%) would qualify a loan as non – performing if it was more than 90 days of overdue principle or interest payment. This reflected that the banks operated within the prudential guidelines.



Source: The author

Figure 4 1: Bank Peers

[1]Kenyan commercial banks are classified into three peer groups using a weighted composite index that comprises assets, deposits, capital, number of deposit accounts and loan accounts. A bank with a weighted composite index of 5 percent and above is classified as a large bank, a medium bank has a weighted composite index of between 1 percent and 5 percent while a small bank has a weighted composite index of less than 1 percent. (Central Bank of Kenya, 2013)

Table 4 1:Sample Profile

	Frequency	Percent	Valid Percent
Peer			
Large	6	21.4	21.4
Medium	9	32.1	32.1
Small	13	46.4	46.4
Non-Performing Loans Qualification			
30- 60 days overdue principle or interest payment	4	14.3	14.3
60-90 days overdue principle or interest payment	4	14.3	14.3
More than 90 days of overdue principle or interest payment	20	71.4	71.4
Total	28	100.0	100.0

Source: The author

The cross tabulation of the peer banks and number of years of service shows that majority (17) of the banks have been in operation for over 20 years and 7 of the banks have been in operation for between 10-20 years. Only 4 of the banks started operations within 5-9years which is also the period when the CRB regulation was operationalised.

Table 4 2:Cross Tabulation Peer * Number of Years In Service

		number of years in service			Total
		Over 20 years	10-20 years	5-9 years	
Peer	Large	5	0	1	6
	Medium	7	1	1	9
	Small	5	6	2	13
Total		17	7	4	28

Source: The author

4.3 Distribution Trend Analysis of Non-performing Loans

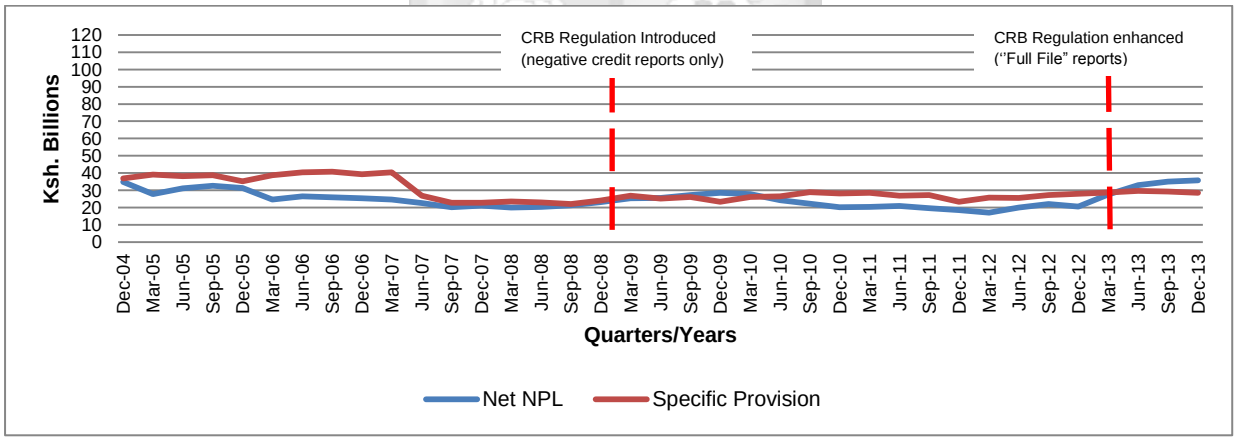
The researcher sought to establish a quarterly distribution trend of non-performing loans for the period 2004 to 2013 in Kenya's banking sector with the introduction of credit reference bureau regulation. An analysis of secondary data in Appendix II, for the period 2004-2013 was conducted to arrive at descriptive statistics and distribution plots in Figures 4.2, 4.3 and 4.4 below.

From Figure 4.2, we observe that overall in the ten year period, NPL had cycles of highs and lows but on a general downward trend since its peak at Ksh. 34.7 Billion in 2004 to its lowest in first quarter of 2012 at Ksh. 17.1 Billion. However, from 2011 there was a sharp increase

in NPL to again peak at Ksh.35.8 Billion in last quarter of 2013, a higher level of NPL than that of 2004.

Notably, the period after 2009 when the CRB regulation was operationalised, the levels of NPL made a sharp decrease from Ksh.28.6 Billion in the fourth quarter of 2009 to Ksh.17.1 Billion in first quarter in 2012 before making a rapid increase to Ksh.35.8B Billion in the last quarter of 2013.This sharp increase in the levels of NPL was notwithstanding the additional CRB regulation for banks to share ''full file'' reports of their borrowers with the CRBs. This indicates that there are other factors that affect the levels of NPL.

Further, it was observed from figure 4.2 that the trend of banks making specific provision for NPL followed closely to the high and low cycle and trend of the NPL within the ten year period. The specific provision made by banks peaked in quarter three of 2006 at Ksh. 40.8 Billion despite the reducing levels of NPL at Ksh.25.9 Billion in the same quarter. A similar occurrence is observed in the last quarter of 2010 where the specific provision for NPL rises to Ksh.28.9 Billion when the NPL is on a reducing trend. From 2012, the specific provision for NPL made by banks continued to rise in tandem with the rising levels of NPL.



Source: The author

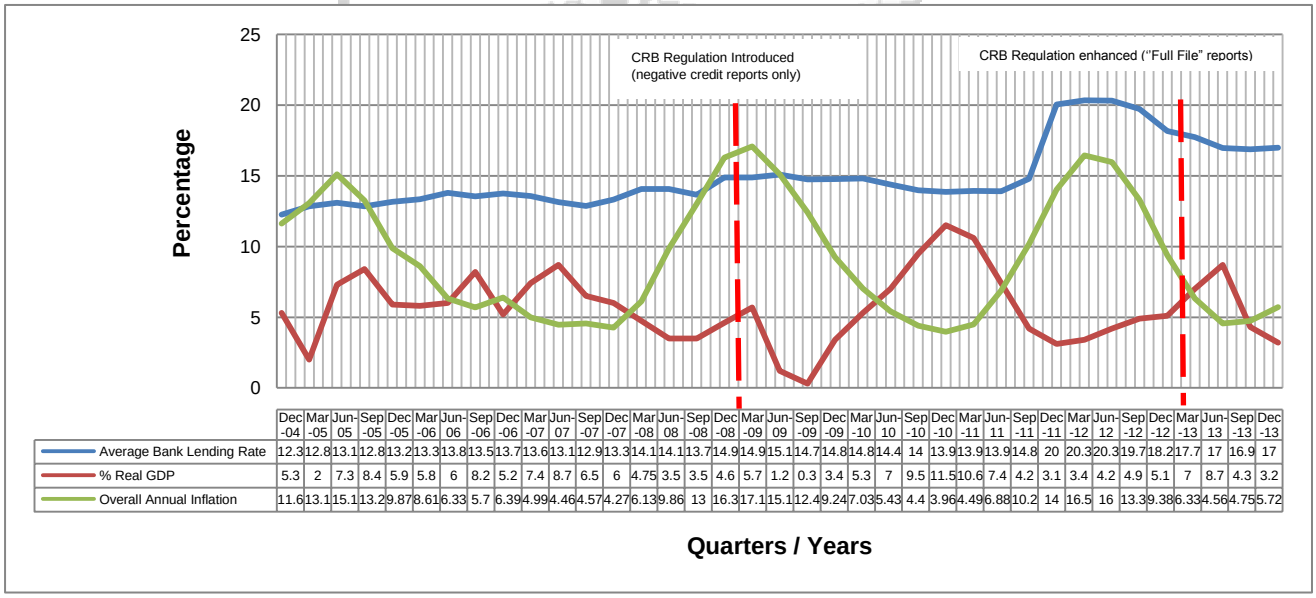
Figure 4 2:Ten year Trend Analysis on NPL and Specific Provision for Commercial Banks

To understand further the trends of other possible factors affecting NPL within the same period (2004-2013) average bank lending rate, % real GDP and overall annual inflation were plotted in Figure 4.3 below. It was observed for the average bank lending rate that, between 2004 and 2010 the lending rate steadied between 13% and 15%.In the last quarter of 2011 and into 2012 the lending rate made a sharp increase to 20% and only decreased to 17% in the last quarter of 2013. This means the cost of credit was very high for the borrower in this period. It was noted that this was also the period that NPL levels made a rapid increase to Ksh.35.5 Billion in the last quarter of 2013 from Ksh.17 Billion. This indicates that bank lending rates do affect the levels of NPL.

Further, from figure 4.3 it was observed that the real GDP growth also experienced highs and lows within the same period (2004-2013).Real GDP growth was on a positive increasing trend since quarter four of 2004 at 5.3% to 6% in 2007 only to dip to 0.3% in the third quarter of 2009.This dip greatly being attributed to the post-election violence experienced in Kenya at the time. From the second quarter of 2010 an upward trend of the GDP was observed peaking at 11.5% in 2010 before taking a downward trend to 3.4% in 2012 and thereafter a decrease to 3.2% in last quarter of 2013.While GDP growth was on an increase between 2004 and 2007, NPL levels were decreasing in the same period. While GDP growth dipped in 2007-2008 and between 2011 and 2013, NPL levels increased in the same period. This means that when there is positive increase in real GDP growth, borrower's ability to pay their loans is increased and hence reduced levels of NPL.

Figure 4.3 also plotted the overall annual inflation in the period 2004-2013.It was observed that overall annual inflation experienced sharp spikes and lows in the ten year period, peaking in second quarter of 2005 at 15.1%, in first quarter of 2009 at 17.1% and in first quarter of 2012 at 16.5%. The overall annual inflation was at its lowest in last quarter of 2007 at 4.27%, in fourth quarter of 2010 at 3.96% and in second quarter of 2013 at 4.56%. While the overall annual inflation peaked in 2009 and in 2012, levels of NPL were increasing in 2009 and decreasing in 2012; and while the overall inflation was at its lowest in 2010 and 2013, NPL levels were decreasing in 2010 and increasing in 2012. This implies that the overall annual inflation may have an indirect effect to the levels of NPL.

Overall, from figure 4.2, 4.3 it was observed that there are various factors affecting levels of NPL either positively or negatively.

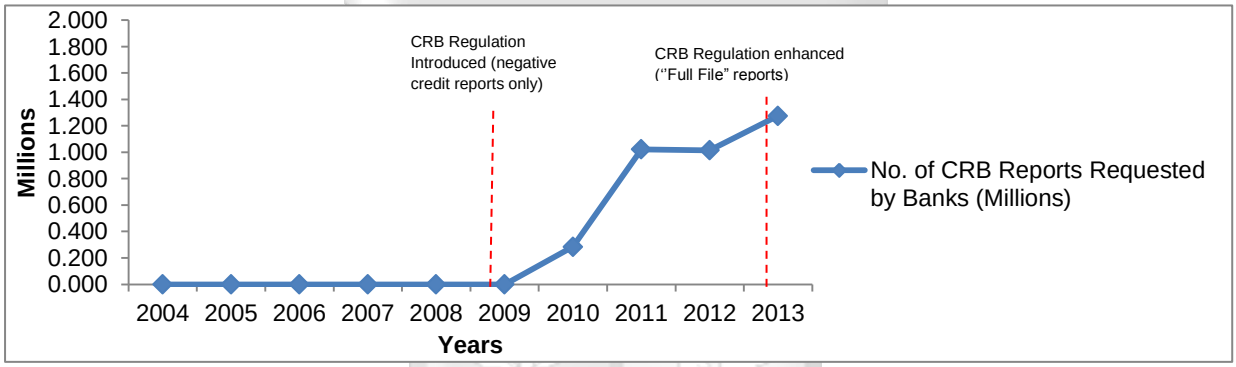


	Dec-04	Mar-05	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06	Sep-06	Dec-06	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09	Mar-10	Jun-10	Sep-10	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11	Mar-12	Jun-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13
Average Bank Lending Rate	12.3	12.8	13.1	12.8	13.2	13.3	13.8	13.5	13.7	13.6	13.1	12.9	13.3	14.1	14.1	13.7	14.9	14.9	15.1	14.7	14.8	14.8	14.4	14	13.9	13.9	13.9	14.8	20	20.3	20.3	19.7	18.2	17.7	17	16.9	17
% Real GDP	5.3	2	7.3	8.4	5.9	5.8	6	8.2	5.2	7.4	8.7	6.5	6	4.75	3.5	3.5	4.6	5.7	1.2	0.3	3.4	5.3	7	9.5	11.5	10.6	7.4	4.2	3.1	3.4	4.2	4.9	5.1	7	8.7	4.3	3.2
Overall Annual Inflation	11.6	13.1	15.1	13.2	9.87	8.61	6.33	5.7	6.39	4.99	4.46	4.57	4.27	6.13	9.86	13	16.3	17.1	15.1	12.4	9.24	7.03	5.43	4.4	3.96	4.49	6.88	10.2	14	16.5	16	13.3	9.38	6.33	4.56	4.75	5.72

Source: The author

Figure 4.3:Ten year Trend Analysis on Average Bank Lending Rates, Percentage Real GDP Growth and Overall Annual Inflation for Commercial Banks

From figure 4.4, it was observed that the banks have been requesting for borrower credit information from the CRBs, since 2009. The requests by banks for reports from the CRBs have been on an increasing trend and have risen from 0.2 million reports in 2009 to 1.2 million borrower credit reports in 2013.It is in the period 2009 to first quarter of 2012 that NPL levels decreased to a low of Ksh.17 Billion in 2011. This implies that access to information on the borrower credit history does influence the levels of NPL. However, it was also observed that from 2012 to 2013 the NPL levels made a sharp increase to a high of Ksh. 35.8 Billion. In this period of 2012-2013 when NPL levels sharply increased a high of Ksh. 35.8 Billion, there was an equally high increase of the number (1.2 million) of reports requested by banks from the CRBs to assist in decision making and assessment of borrowers. This means that besides correcting the information asymmetry of banks on their customers as borrowers, there are other factors that affect the levels of NPL.



Source: The author

Figure 4 4: Number of CRB Reports on Borrowers Requested by Banks

4.4 Key Factors Accounting for Non-Performing Loans in Kenya

The second research objective sought to determine the key factors that account for non-performing loans in Kenya. Factor analysis was used to identify these key factors and their factor loadings.

As a pre-test to factor analysis, the study used Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's test and the results presented in Appendix III. The results show KMO statistics of 0.501, which was above the threshold of 0.5 set by Field (2005) as a minimum for patterns of correlation to be relatively compact. The resulting Bartlett's Test of Sphericity shows a significant value of 0.000, which implied that a strong relationship exists amongst the variables. The study therefore proceeded with factor analysis.

The initial solution presented in Table 4.3 shows four components had Eigenvalues greater than 1, and explained 77.25% of the variations. The first 4 components are indicative as explaining 77.25% of the variations in nonperforming loans, leaving 22.75% of the variations

unexplained. To explain the 22.75% of variations, the study therefore rotated the components.

Table 4 3:Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.779	30.876	30.876	2.779	30.876	30.876
2	1.619	17.984	48.860	1.619	17.984	48.860
3	1.388	15.427	64.287	1.388	15.427	64.287
4	1.167	12.963	77.250	1.167	12.963	77.250
5	.778	8.649	85.899			
6	.571	6.350	92.249			
7	.283	3.141	95.390			
8	.218	2.423	97.813			
9	.197	2.187	100.000			

Extraction Method: Principal Component Analysis.

Source: The author

The study adopted a Varimax with Kaiser Normalization rotation method resulting in Table 4.4 below. Using the Principle Component Analysis (PCA) four components were extracted and after factor interpretation, they resulted in three factors namely: Bank specific factor, regulation and macro-economic factor.

The three factors extracted from the factor analysis were subjected to a reliability test. Table 4.4 shows the resulting Cronbach's alpha value of bank specific factors was $\alpha = 0.792$ and the macro-economic factors $\alpha = 0.749$. The scale test of the factor regulations could not be performed given that only one item loaded on it. This meant that bank specific factors and macro-economic factors were both reliable and internally consistent since they both had $\alpha \geq 0.7$.

From table 4.4, the first component was defined by three variables, with insufficient information reflecting a factor loading of 0.902 followed by credit criteria (0.880) and inadequate screening (0.697). The three variables were interpreted as bank specific factors. The second component was provision regulation with a factor loading of 0.895 and was interpreted as the factor, regulation. The third component had three items loading on it; high lending rates at 0.940, monitoring cost at 0.807 and managers provision decision at 0.665.These were interpreted as bank-specific factor. The fourth component had two items

loaded on it, unemployment at 0.808 and negative economic growth at 0.779. These were interpreted as macroeconomic factor.

The analysis shows that there are three key factors that account for non-performing loans in Kenya – bank-specific, regulation and macroeconomic factors. Of the bank-specific factors, insufficient information and high lending rates with the highest factor loading of 0.902 and 0.940 respectively, explain the most variation in NPL more than credit criteria (0.880) and monitoring cost (0.807) and much less inadequate screening (0.697) and managers provision decision (0.665). Of the macroeconomic factors, unemployment at 0.808 factor loading explains more of the NPL variation than negative economic growth (0.779). Provision regulation (0.895) does explain more of NPL variation than the macroeconomic factors. Bank specific factors explain most of NPL variation, more than regulation and macroeconomic factors.

Table 4 4: Rotated Component Matrix

	Component				Factor	Cronbach's alpha
	1	2	3	4		
Insufficient Information	.902					
Credit Criteria	.880				Bank Specific	0.792
Inadequate Screening	.697					
Provision Regulation		.895			Regulation	
High Lending Rates			.940			
Monitoring Cost			.807		Bank Specific	0.792
Managers Provision Decision			.665			
Unemployment				.808	Macro-economic Factors	0.749
Negative Economic Growth				.779		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Source: The author

4.5 Relationship between Key Factors and Non-Performing Loans

Using secondary data presented in Appendix II, the study sought to establish the relationship between non-performing loans and the key factors - bank-specific and macroeconomic. Regression analysis was used to examine this relationship. The study assumed a linear relationship between the independent variables (key factors) and dependent variable (non-performing loans). Assuming a linear relationship between the variables the Ordinary Least Square (OLS) method of estimation was used to examine the regression model below.

$$NPL = \alpha_0 + \beta_1 BSF + \beta_2 MEF + \varepsilon$$

From the equation, NPL stood for Non-Performing Loans, α_0 for constant related to the regression equation, β_1, β_2 for the coefficients of the independent variables, BSF for Bank specific factors, MEF for macroeconomic factors and ε for the error term related to the regression equation. The data was subjected to the following assumption of regression; normality test, a test of linearity, that the error term (ε) are normally and identically independently distributed along the regression line (homoscedastic) and that there were no significant outliers in the data set. There was no major violation of these assumptions and the data was used in regression analysis.

In order to examine the relationship between bank specific factors, macro-economic factors and non-performing loans, the study tested the research hypotheses stated as below:

H_{01}: Bank specific factors have no significant effect on NPL
H_{02}: Macro economic factors have no significant effect on NPL

Following a regression analysis with bank specific factors (represented by Bank Lending Rate – BLR and Specific Provision for NPL Index - SPNPLI) and macro-economic factors (represented by Real GDP – RGDP and Overall Annual Inflation - OAI) as independent variables and asset quality ratio (AQR) - the ratio of net Non-Performing Loans to Gross Loans as a proxy for NPL - as the dependent variable, the output in Figure 4.5 was arrived at.

From Figure 4.5, the model summary section shows that the F-value (4, 32) was = 15.26 and the associated P-value = 0.0000. This was interpreted to mean the model was significant in explaining the linear relationship between the key factors and NPL. The resulting model had a coefficient of determination (R^2) of 0.6561, implying that the model predicted by bank specific factors and macroeconomic factors explained 65.61% of the variations in nonperforming loans. This model therefore provided a good fit.

The coefficients section of Figure 4.5 was used to model the relationship between bank specific factors, macroeconomic factors and NPL. This relationship was examined by testing the research hypotheses, which stated that:

H_{01}: Bank specific factors have no significant effect on NPL
H_{02}: Macro economic factors have no significant effect on NPL

An examination of the coefficients of bank specific factors in Figure 4.5 showed that Specific Provision for NPL Index (SPNPLI) had significant coefficients (β_1=0.0196163, *p*-value = 0.014) and that Bank Lending Rate (BLR) had significant coefficients (β_2= - 0.7533849, *p*-value = 0.000). This meant that bank specific factors had a significant effect on NPL and the study therefore rejected H_{01} at $\alpha = 0.05$ level.

An examination of the coefficients of macroeconomic factors in Figure 4.5 showed that Overall Annual Inflation (OAI) had significant coefficients (β_3=0.2170174, *p*-value = 0.001) while Real GDP (RGDP) coefficients was non-significant after registering *p*-values> 0.05. This meant that macroeconomic factor, Overall Annual Inflation had a significant effect on NPL and the study therefore rejected H_{02} at $\alpha = 0.05$ level while failing to reject H_{02} at $\alpha = 0.05$ level on the grounds that macroeconomic factor Real GDP was non-significant after registering *p*-values> 0.05.

```
. regress aqr spnpli blr oai logrgdp
```

Source	SS	df	MS		
Model	104.158775	4	26.0396937	Number of obs	= 37
Residual	54.5979819	32	1.70618693	F(4, 32)	= 15.26
				Prob > F	= 0.0000
Total	158.756757	36	4.40990991	R-squared	= 0.6561
				Adj R-squared	= 0.6131
				Root MSE	= 1.3062

aqr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
spnpli	.0196163	.0075571	2.60	0.014	.004223	.0350097
blr	-.7533849	.1014847	-7.42	0.000	-.9601026	-.5466673
oai	.2170174	.0599093	3.62	0.001	.0949861	.3390487
logrgdp	.2846979	.371208	0.77	0.449	-.4714281	1.040824
_cons	11.15448	1.739776	6.41	0.000	7.610672	14.69829

Source: The author

Figure 4.5: Regression Statistics of Key Factors Affecting Non Performing Loans

4.5.1 A model relating Key Factors and Non-Performing Loans

Resulting from the analysis of Figure 4.5, the study sought a model that would give the best fit for the relationship between the key factors and non-performing loans. The fitted regression model was presented was follows.

$$AQR = 11.15 + 0.0196SPNPLI - 0.7534BLR + 0.2847OAI$$

From the equation, AQR was the Asset Quality Ratio, SPNLI was Specific Provision for NPL Index, BLR was Bank Lending Rate and OAI was the Overall Annual Inflation. The fitted regression equation had an $R^2 = 0.6561$, implying that the model predicted by bank specific factors and macroeconomic factors explained 65.61% of the variations in nonperforming loans. This model provided a good fit.

From the equation, the coefficient of SPNLI was interpreted to mean that a unit change in SPNLI would lead to a 1.9% increase in AQR; the coefficient of BLR was interpreted to mean that a unit change in BLR would lead to a 75.3% decrease in AQR while the coefficient of OAI was interpreted to mean that a unit change in OAI would lead to 21.7% increase in AQR.

4.6 The Role of Information Sharing in Mitigating Non-Performing Loans

From the primary data collected the study sought to evaluate the role of information sharing in mitigating NPL. Table 4.5 shows the relationship of banks with the CRBs for submission of borrower data. All the 28 banks in the study do submit borrower information to the CRBs. The information submitted is both positive and negative borrower information. While 92.9% of the banks submit the borrower information monthly, 7.1% of the banks submit borrower information twice a month. This meant that the banks in this study were compliant with the CRB regulation of monthly submission of borrower information to the CRBs.

Table 4 5: Relationship between banks and CRBs

Role	Frequency	Percent	Valid Percent
Bank Submission			
Yes	28	100.0	100.0
Information Type			
Both	28	100.0	100.0
Submission Frequency			
Twice a month	2	7.1	7.1
Monthly	26	92.9	92.9
Total	28	100.0	100.0

Source: The author

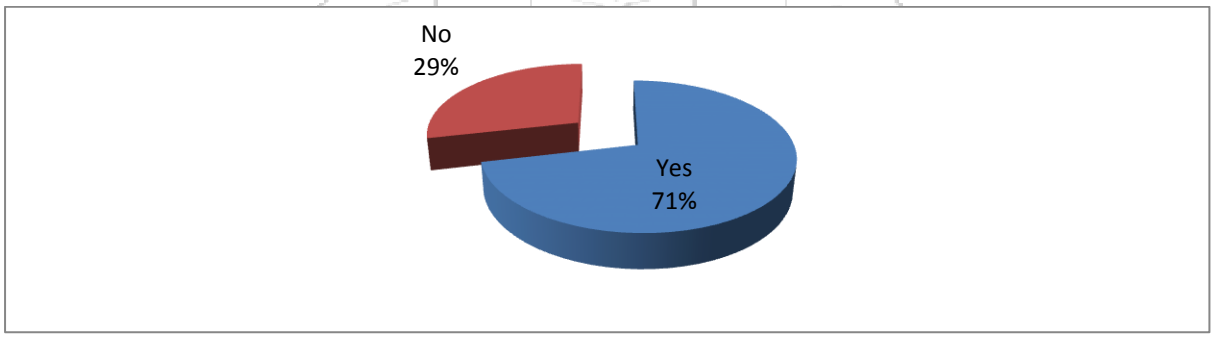
Table 4.6 displays the reasons for bank inquiries at the CRB. The main reason for inquiry at CRB was identified by 96.4% of the respondents as loan application. This implies that information sharing on borrowers is considered critical at the pre-assessment stage of loan application. It was also observed that 60.7% of the banks do not make inquiries when monitoring borrowers. Other reasons for inquiring at CRB given by 6 banks included, inquiring whether the borrower has other loans, to know the credit worthiness of the borrower, to establish possible circumstances for default by the borrower, to establish more information on the customer where there is a hint of delinquency as well as part of the *know your customer* (KYC) practice at the point of account opening.

Table 4 6:Reasons For Bank Inquiries

Reasons	Frequency	Percent	Valid Percent
Loan Application			
Reason for enquiry	27	96.4	96.4
Not a reason for enquiry	1	3.6	3.6
Monitoring Borrower			
Reason for enquiry	11	39.3	39.3
Not a reason for enquiry	17	60.7	60.7
Total	28	100.0	100.0

Source: The author

Figure 4.8 shows that 71% of banks in the study registered a significant change in their operations after the enforcement of CRB regulations; only 29% indicating that they did not register any significant change. This indicates that sharing of information amongst banks could significantly affect non-performing loans.



Source: The author

Figure 4.8: Banks that made significant changes in operation following CRB regulation

After confirming that there were significant changes to bank operations for some banks, the study sought to establish the changes made. Table 4.7 shows that 57.1% had to change their Information management system. This indicates that the banks had to adapt to the CBK format of information submission. Further, table 4.7 shows that only 39.3% of the banks had to make any changes in the structure. On further inquiry it was observed that most of the

changes were made in the role of the credit department. From table 4.7, most of the banks (50%) did not have to make any changes in the disclosure of financial information. Only 25% did make changes in their financial disclosures. This meant that they had to increase the number of reports submitted to CBK.

Table 4 7:Type of Changes Made

	Frequency	Percent	Cumulative Percent
Information Management System change			
Changes made	16	57.1	76.2
No changes made	5	17.9	23.8
Total	21	75.0	100.0
Missing in System	7	25.0	
Change in Structure			
Changes made	11	39.3	52.4
No changes made	10	35.7	47.6
Total	21	75.0	100.0
Missing in System	7	25.0	
Disclosure of financial information			
Changes made	7	25.0	33.3
No changes made	14	50.0	66.7
Total	21	75.0	100.0
Missing in System	7	25.0	
	28	100.0	

Source: The author

The study sought to examine the likely decisions made by banks upon receiving either negative or positive information of a borrower from the CRBs.

4.6.1 Bank Decisions on Receiving Negative Credit Information of a Borrower

On examining the type of information received by banks, 100% of the respondents indicated that they received both negative and positive information from CRB. This meant that banks were complying in submitting full file information to the CRB and were able to access the same. The study further sought to understand the likely decisions of the banks on receiving negative credit information of a borrower. Table 4.8 shows that 50% of the banks are likely ration credit upon receiving negative information about a borrower, while 50% of the banks

are not likely to ration credit for the borrower. This indicates that negative credit information is not the only consideration for credit rationing.

Table 4.8 indicates that 64.3% of the banks are not likely to increase the lending rate upon receiving negative information of the borrower while 35.7% of the banks are likely to increase the lending rate on receiving negative information on a borrower. This means that the risk of a borrower is built in to the lending rate and not entirely dependent on the negative information of the borrower.

From the table 4.8, it can be observed that 92.9% of the banks are not likely to increase provision for bad debt upon receiving negative information of a borrower. This means that banks do not wholly rely on CRB information when making decisions for providing for bad debt. On receiving negative information of a borrower, 60.7% of the banks are likely to demand for collateral as a risk mitigation measure.

Table 4.8 also shows that 82.1% of banks are unlikely to increase the budget for monitoring a borrower throughout the loan contract period, based on the negative information received from the CRB. This means that the decision to issue a loan is independent of the budget allocation for monitoring the borrower throughout the loan contract period.

From table 4.8 the study established that 85.7% of the banks are likely to make the decision of rejecting the loan application upon receiving negative information of the borrower from the CRB. This means that CRB reports equips banks to make more informed decisions on the borrower at the point of loan application averting non-performing loans from the on-set. In addition, 3 of the respondents identified other decisions taken upon receiving negative information of a borrower from the CRB. These include the banks seeking more information on the reason for listing, whether the borrower has other loans or investigating to establish the true position of default as the bank may decide to still lend to the borrower but on a structured loan arrangement.

Table 4 8:Bank Decisions on Receiving Negative Credit Information of a Borrower

	Frequency	Percent	Valid Percent
Credit Rationing - negative information			
Likely decision	14	50.0	50.0
Not a likely decision	14	50.0	50.0
Increase Lending Rate			
Likely decision	10	35.7	35.7
Not a likely decision	18	64.3	64.3
Increase Provision			
Likely decision	2	7.1	7.1
Not a likely decision	26	92.9	92.9
Demand Collateral			
Likely decision	17	60.7	60.7
Not a likely decision	11	39.3	39.3
Increase Monitoring			
Likely decision	5	17.9	17.9
Not a likely decision	23	82.1	82.1
Loan Rejection			
Likely decision	24	85.7	85.7
Not a likely decision	4	14.3	14.3
Total	28	100.0	100.0

Source: The author

4.6.2 Bank Decisions on Receiving Positive Credit Information of a Borrower

On receiving positive credit information, 85.7% of the banks are not likely to take a decision to ration credit.14.3% of the banks however are likely to take the decision to ration credit. This means that some of the banks would ration credit to the borrower based on the sector ceilings or the bank allowable headroom despite receiving positive credit information. Table 4.9 also shows that 53.6% of the banks would reduce lending rates on receiving positive credit rating of a borrower. This means that some banks allow room for negotiation of lending rates to their borrowers who have a positive credit rating.

From table 4.9, most banks (89.3%) are unlikely to decrease provision for bad debt on receiving positive information of borrowers from the CRBs. Therefore positive information may not sufficient to contribute to the decision to provide for bad debt.71.4% of the banks are not likely to waive collateral for a borrower on receiving positive information from the CRB. This indicates that for certain types of loans collateral would still be mandatory. Table

4.9, majority of the banks (85.7%) are not likely to reduce the budget for monitoring of borrowers throughout the loan contract. This implies that the budget for monitoring of borrowers is independent of the positive credit rating of the borrower. It was noted that 60.7% of the banks are likely to approve a loan upon receiving positive credit information on a borrower. In addition, 5 of the banks identified other likely decisions of the banks on receiving positive information of a borrower. These included, the bank seeking more information on the borrower and approval made subject to the loan assessment criteria of the bank and cross-selling of other loan products to the borrower based on the assessed business needs.

Table 4 9:Bank Decisions on Receiving Positive Credit Information of a Borrower

	Frequency	Percent	Valid Percent
Credit Rationing - positive information			
Likely decision	4	14.3	14.3
Not a likely decision	24	85.7	85.7
Reduce Lending Rate			
Likely decision	15	53.6	53.6
Not a likely decision	13	46.4	46.4
Decrease Provision			
Likely decision	3	10.7	10.7
Not a likely decision	25	89.3	89.3
Waive Collateral			
Likely decision	8	28.6	28.6
Not a likely decision	20	71.4	71.4
Decrease Monitoring			
Likely decision	4	14.3	14.3
Not a likely decision	24	85.7	85.7
Loan Approval			
Likely decision	17	60.7	60.7
Not a likely decision	11	39.3	39.3
Total	28	100.0	100.0

Source: The author

4.6.3 Tools used in Assessment Prior to Credit Reference Bureau

Prior to the enforcement of the CRB regulation, banks used other tools to assess borrowers' credit worthiness. Table 4.10 shows that 78.6% of the banks used relationship management for analysing their customers while 53.6% of the banks required collateral from their borrowers. Relationship management assisted the bank managers in keeping close to the borrowers to understand the projects undertaken and decisions taken. Collateral was the security required by the bank to mitigate default risk. Credit rationing and fees were less used.

Table 4 10:Tools used in Assessment Prior to CRB

	Frequency	Percent	Valid Percent
Relationship Management Tool			
Tool used	22	78.6	78.6
Tool not used	6	21.4	21.4
Collateral Tool			
Tool used	15	53.6	53.6
Tool not used	13	46.4	46.4
Credit Rationing Tool			
Tool used	9	32.1	32.1
Tool not used	19	67.9	67.9
Fees Tool			
Tool used	3	10.7	10.7
Tool not used	25	89.3	89.3
Total	28	100.0	100.0

Source: The author

4.6.4 Effect of the Banks cost of Monitoring the Borrower

From table 4.11, most of the banks (39.3%) indicated that the cost of monitoring the borrowers had increased by less than 25% following the banks use of CRB borrower information. This implies that while credit information is vital for managerial decision making, there are other considerations made by managers.

Table 4 11:Effect on Monitoring Cost

	Frequency	Percent	Valid Percent
Less than 25% increase in monitoring cost	11	39.3	39.3
More than 50% increase in monitoring cost	3	10.7	10.7
less than 25% decrease in monitoring cost	7	25.0	25.0
Approx. 50% decrease in monitoring cost	1	3.6	3.6
No effect on monitoring cost	6	21.4	21.4
Total	28	100.0	100.0

Source: The author

4.6.5 Interaction of the CRBs with the banking sector

The study also sought to understand the interaction of the banking sector with the licensed CRBs.

All the commercial banks and mortgage finance institutions are subscribed to submit and request for full file information from either one or both the CRBs. Submissions are done monthly by the 10th day. With the implementation of CRB regulation on full file information,

CRBs hold more positive than negative credit information on borrowers in the approximate proportion of 75%:25% respectively and have been able to launch a more stable credit score based on both positive and negative information, which is more useful to banks. CRB services used by the banks, at a cost, include credit score monitoring and alerts with respect to the loan appraisal process; reports to banks for the account opening process; skip-tracing process of verifying names and contacts in the database as part of bank's due diligence on borrowers with multiple loans in different banks. CRBs sign memoranda of understanding with the banks as part of the information sharing system and an indemnity for liability to banks in case of data inaccuracies. There are cases of inaccurate or incomplete data submitted monthly by the banks, where some banks may seek to protect their customers. CRBs subject all data received to data validation tools with 95% threshold for correctness and that give error logs. For incomplete information CRBs do also ask for resubmission of data by the banks. In addition, CRBs have a conflict resolution mechanism in case of disputes with customers on data inaccuracies. Nonetheless any amendments to the data can only be done upon direct instruction from the listed bank. Legal action on customer disputes is considered a measure of last resort for dispute resolution.

CRBs file monthly returns to the CBK, by the 15th day. Categories of information shared with the CBK include the number of NPL reported by banks, number of positive information reported by banks, number of inquiries per bank and number of rejected information per bank this being from inaccurate data submitted. CBK conducts annual audits of the CRBs. This means that CBK, from the data received, are better placed to assess the levels of NPL for entire banking sector.

Chapter 5: Discussion

This study sought to establish a quarterly trend of NPL over 10 years (2004-2013) in Kenya's banking sector, especially with the operationalisation of the CRB regulation within this period, in 2009. Further, the study aimed to not only identify the key factors accounting for NPL and examine their relationships but to also evaluate the role of information sharing on NPL and proposing strategies on improving information sharing that can mitigate NPL in Kenya's banking sector.

5.1 Ten Year distribution trend of Non-Performing Loans in Kenya

An analysis of the secondary data illustrated that in the period 2004-2013 the levels of NPL in Kenya experienced high and low cycles but were generally on a decreasing trend until 2012 when a sharp increase was experienced to peak at Ksh. 35.8 Billion in 2013 higher than the 2004 peak of Ksh. 34.7 Billion. The CRB regulation was operationalised in 2009 and the practice of obtaining borrower credit information reports from the CRBs was reflected as an upward trend from 0.28 million reports in 2010 to 1.27 million reports in 2013. With credit information sharing in effect, from 2009-2011 NPL experienced a decrease before experiencing the sharp increase to Ksh. 35.8 Billion seen in 2013.The analysis therefore provided the key observation that levels of NPL are affected by various factors with information sharing being a contributing factor.

This observed trend of NPL levels was then compared to trends of other key factors such as specific provision for NPL made by banks, average bank lending rates, real GDP growth and annual overall inflation. It was observed that the behaviour of the levels of NPL followed the behaviour of these factors either positively or negatively.

The NPL levels showed a direct relationship with the bank lending rates by decreasing to an average of Ksh.24 Billion with steady lending rates of 13%-15%, but increasing sharply to Ksh. 35.8 Billion with a spike in lending rates to 20%. The trend of banks making specific provision for NPL showed that whereas banks made provision in tandem with anticipated NPL, there were years where the specific provision exceeded the level of NPL, implying that some of the loans classified as non-performing and provided for, were later re-classified or paid off by the borrower reflecting on a reduced level of NPL.

Real GDP was observed to have a high and low behaviour that reflected an inverse relationship with NPL levels, where NPL levels would increase with decrease in real GDP growth and vice versa, meaning that when there's positive economic growth borrower's ability to pay their loans is enhanced hence reduced NPL.

The behaviour of NPL compared to overall annual inflation rates in some years increased with increase in overall inflation rates and decreased with the increase in overall inflation rates. This indicated that overall inflation rates may or may not affect the NPL levels in Kenya.

5.2 Key factors accounting for non-performing loans in Kenya

The study identified three key factors that account for the levels of non-performing loans in Kenya's banking sector. These factors are bank specific factors, provision regulation and macroeconomic factors. The bank specific factors explaining variations in NPL included insufficient information of the borrower by the banks, the credit criteria used by banks to assess qualifying loans, inadequate screening of loan applications by the banks, high bank lending rates, cost of monitoring borrowers and the decision by bank managers to make provision for macroeconomic factors explaining variations in NPL included negative economic growth and unemployment.

5.3 Relationship between Key factors accounting for non-performing loans

To explain the relationship between the key factors identified – bank specific factors and macroeconomic factors - that account for non-performing loans, below is the fitted multiple regression model. The fitted regression equation had an R^2 = 0.6561, implying that the model predicted by bank specific factors and macroeconomic factors explained 65.61% of the variations in nonperforming loans.

$$AQR = 11.15 + 0.0196SPNPLI - 0.7534BLR + 0.2847OAI$$

From the equation, AQR was the Asset Quality Ratio, SPNLI was Specific Provision for NPL Index, BLR was Bank Lending Rate and OAI was the Overall Annual Inflation. The fitted regression equation had an R^2 = 0.6561, implying that the model predicted by bank specific factors and macroeconomic factors explained 65.61% of the variations in nonperforming loans. This model provided a good fit.

From the equation, the coefficient of SPNLI was interpreted to mean that a unit change in SPNLI would lead to a 1.9% increase in AQR; the coefficient of BLR was interpreted to mean that a unit change in BLR would lead to a 75.3% decrease in AQR while the coefficient of OAI was interpreted to mean that a unit change in OAI would lead to 21.7% increase in AQR.

In the multiple regression model real GDP showed non significance in registering $p>0.05$. This is inconsistent with the expectation suggested by (Klein, 2013) that real GDP has an inverse relationship with NPL where a rising real GDP rate indicates positive economic

growth allowing for better ability to service loans by borrowers and subsequently reduces NPL and vice versa.

5.4 The Role of Information Sharing on Non-Performing Loans

An analysis of the primary data clarified that banks do submit to and access from CRBs full file credit information of borrowers to two CRBs as at December, 2014.

96.4% of inquires at CRB by banks are for borrower information at the loan application stage and for some at the account opening stage and seldom (39.3%) in the monitoring of the borrower in the loan contract period. This reflects the use of borrower credit information by banks for decision making to prevent the incidence of NPL early enough.

With the CRB regulation 71% of the banks had to make changes to their operations such as in the information management system (57%) to adapt CBK format of information submission to CRB, disclosure of financial information (25%) by increasing reports submitted to CBK and CRB and in the structure and role of the bank's credit department by incorporating the new function of information sharing and reporting.

Likely decisions of a bank on receiving negative information on a borrower would be to ration credit (50%), to demand for collateral (60.7%) and to reject the loan application (85.7%) but not to increase the lending rate (64.3%) which may already have a risk-premium built in or to increase provision for bad debt (92.9%) or increase the budget for monitoring a borrower throughout the loan contract period (82.1%) as these may be decisions taken by the bank independent of the negative credit information received from CRBs. This shows that with the negative credit information of a borrower known to the bank at the point of loan application, bank managers can take decisions to mitigate credit risk through credit rationing and demand for collateral. Noteworthy, is that despite negative credit information from CRBs some banks investigate to seek further information on the reason for listing or to establish the true position of default and then take the decision to still lend to the borrower but on a structured loan arrangement. This indicates that banks either do not yet fully embrace CRB credit information as accurate or are still willing to take risks in lending to their customers despite knowledge of the borrower's negative credit history.

On receiving positive information on a borrower a likely decision of the bank would be to reduce lending rates (53.6%) thus providing room for borrowers to negotiate for lower lending rates and approve the loan (60.7%) and ultimately improve access to credit. A few banks (14.3%) would ration credit based on the sector borrowing limits or the headroom available for the manager to lend. However, despite receiving a borrowers positive credit information most banks (71.4%) will not waive the need for collateral where required. This

shows that for some loans positive information of the borrower may not suffice to hedge the bank of the credit risk associated with the particular loan. Positive credit information for a borrower will seldom have the bank decrease provision for bad debt (89.3%) or reduce the budget for monitoring the borrower in the contract period (85.7%) as these seem to be decisions taken independent of the information. It is also worth noting that positive information is adopted by banks as only one criterion of several for subjecting a borrower and loan to assessment.

Prior to the CRB regulation, banks often used other tools such as relationship management (78.6%) to reduce the information asymmetry with their borrowers and collateral (53.6%). These two tools have continued in use alongside the information sharing system now in place.

All banks endorsed that there has been positive effect from the information sharing system on the banks' non-performing loans. The banks' NPL levels have reduced, curtailing serial defaulters and disciplining borrowers to repay and the managers' decision making on loan applications and making provisions for NPL is better informed. In addition, most of the banks (39.3%) indicated a marginal increase by less than 25% while other banks (25%) indicated a marginal decrease of less than 25%, in the cost of monitoring borrowers but with immense benefits on mitigating NPL.

All the commercial banks and mortgage finance institutions are subscribed to submit monthly and request for full file information from either one or both the CRBs. CRBs hold more positive than negative credit information on borrowers. Full file information has enabled launching of a more stable credit score useful to banks. Data validation is crucial at CRBs to avoid inaccuracies arising from inaccurate or incomplete data submitted by banks which may seek to protect their customers towards profit maximisation. This then may affect bank managers' decisions, for instance in denying a deserving borrower a loan because the credit history records were inaccurate. Banks still have a challenge with multiple borrowers of many banks when they use different identification and contacts for different banks therefore appearing as different persons in CRB database. The skip-trace process then becomes very essential to weed out the serial defaulters.

Monthly returns filed to CBK by the CRBs include the number of NPL reported by banks, number of positive information reported by banks, number of inquiries per bank and number of rejected information per bank this being from inaccurate data submitted. CBK therefore can or may already be using this sector-wide data on NPL to assess the levels of NPL for entire banking sector and develop relevant regulation on credit risk for the banking sector.

5.5 Strategies to Improve Information Sharing towards Mitigating Non-Performing Loans

From the experience on information sharing in Kenya's banking sector, the commercial banks recommend improvements in having a more comprehensive view of the borrowers' credit history and level of obligation. This could be achieved through an expanded information database on borrowers and from both the formal and informal sectors. This means including information from the non-formal banking sector for example, Savings and Credit Cooperatives (SACCO), utility information – electricity, water, Municipal Council information – land rates and rent, information on current and savings accounts, reasons for the borrowers' default. In addition, easy access to the data is important to the banks either as real time information access products or increase in the number of CRBs to cope with the demand. This is particularly important to avoid over commitment of the borrower where several banks approve facilities for a client at the same time. Accuracy of data and a standardised credit scoring was strongly recommended to improve the information sharing system as well as decision making for banks. To support this, banks and CRBs could merge identification records of borrowers beyond the national ID to include passports and photos to weed out multiple borrowers and serial defaulters. CBK could also impose penalties on banks that do submit insufficient and inaccurate full file information regularly. In addition getting the endorsement of key sector players like the Kenya Association of Credit Providers and coordination of the fiscal and monetary policies would greatly improve information sharing for Kenya's banking sector.

CRBs did also recommend banks to improve the quality and integrity of the data submitted by having a dedicated unit in the bank dealing specifically with the credit data of borrowers. This implies that the banks that did not make operational changes within their credit department role and information system to cater for the monthly submissions may be victims of this challenge. In addition, commercial banks or the Kenya Bankers' Association should define a threshold below which a borrower should not be listed at the CRBs. This will take care of the problem of listing customers who are listed for small amounts such as 0.35 cents and thereafter get denied loans.

5.6 Limitations to the study

The key limitation faced by the researcher during the study was the denial of gaining access to respondents. CBK, key respondent on the regulation factor affecting NPL levels, denied the researcher an opportunity for a semi-structured interview. In addition, some commercial banks refused to respond to the self-administered questionnaire citing a 'no external

interviews' bank policy. The researcher therefore conducted analysis of 28 of 44 questionnaires and no data from CBK on regulation.

Chapter 6: Conclusion and Recommendations

With this study the researcher conducted an evaluation of the role of information sharing in mitigating non-performing loans for commercial banks in Kenya. Guided by five objectives, the researcher reviewed literature and thereafter collected and analysed both secondary and primary data to inform the conclusion.

6.1 Conclusion

The study established that in the ten year period from 2004 to 2013 the quarterly distribution trend of non-performing loans in Kenya's banking sector was decreasing from a high of Ksh. 34.7 Billion in 2004 to a low of Ksh.17 Billion in 2011 before a sharp spike to Ksh.35.8 Billion in 2013. The sector also sharply increased the obtaining of borrower credit information reports from the CRBs from 0.28 million reports in 2010 to 1.27 million reports in 2013.The decline of NPL in 2009 to 2011 may be attributed to the CRB regulation and information sharing practice among banks. However the sharp spike in NPL levels in 2013 to Ksh.35.47 Billion when credit reports requested by banks were increasing and at a high of 1.27 million then confirmed that information sharing practice is only one among other factors that account for NPL, as hypothesised by (Klein, 2013).

Other variables plotted against NPL for the same period also showed behaviour of NPL. The NPL levels have a direct relationship with the bank lending rates. NPL levels will increase with increase in lending rates since credit becomes too costly and borrowers strain to service the loans especially when disposable income does not increase at the same rate resulting in defaults. While banks make specific provision for NPL, in some years the specific provision curve exceeded the NPL curve. This implied that either banks are prudent to provision more for NPL when the economy is performing well for use in the tough economic times when credit risk materialises consistent with (Njoroge & Kamau, 2010) suggestion, or could imply that whereas bank managers took the risk mitigation measures to provide for NPL, some of the loans for which provision was made were honoured and paid fully by the borrowers or re-classified or structured differently by banks enabling the borrower to pay therefore reducing NPL levels for the banks. The Real GDP growth showed an inverse relationship with NPL levels where NPL levels would increase with decrease in GDP growth and vice versa meaning that when there's positive economic growth, borrower's ability to pay their loans is enhanced hence reduced NPL while overall annual inflation may or may not affect NPL levels in Kenya's banking sector which resonates with (Fofack, 2005) suggestion that there's a low correlation of inflation and NPL.

The study further identified the key factors accounting for non-performing loans in Kenya's banking sector. Three key factors were identified, macroeconomic factors, banks specific factors and regulation. Macroeconomic factors included negative economic growth and unemployment; bank-specific factors included high bank lending rates, insufficient information of the borrower by the banks, the credit criteria used by banks to assess qualifying loan applications, inadequate screening of loan applications by the banks, cost of monitoring borrowers in the loan contract period and the decision by bank managers to make provision for anticipated NPL. Regulation was specific to provision of bad debts.

An examination of the relationship between the key factors accounting for non-performing loans in a multiple regression model with R^2 of 0.6561 showed that bank specific factors-bank lending rates and specific provision for NPL have significant influence in the variations of NPL levels. This means that a big proportion of the mitigation of default risk depends on the banks policies, decisions and practices and much less on regulation or macroeconomic factors, given that unit change in bank lending rates would lead to a 75.3% decrease in asset quality because of increased NPL and a unit change on specific provision would increase asset quality by 1.9%.

Of the macroeconomic factors only overall annual inflation showed significant influence in the variations of NPL levels, with a unit change in overall annual inflation leading to 21.7% increase in asset quality, meaning there is reducing NPL. This finding contradicts (Fofack, 2005) who suggests a low correlation between NPL and inflation.

Further, Real GDP as a macroeconomic factor showed non significance, a contradiction to (Klein, 2013) suggestion that real GDP has an inverse relationship with NPL where a rising real GDP indicates positive economic growth allowing for better ability to service loans by borrowers and

As a bank specific factor, information sharing role is significant in mitigating non-performing loans in Kenya's banking sector and has grown since 2009 with the operationalisation of the CRB regulation although with room for improvement. All banks submit borrower information to the licensed CRBs as mandated by law, and 71% of the banks had to make changes to their operations to fully practice information sharing. Banks mostly use the credit information of borrowers as one of many assessment criteria for loan application and account opening among other criteria, and less for monitoring the borrower during the loan contract period. Negative credit information received from CRBs assist banks take decision for credit rationing, demanding collateral and rejection for loan application. Positive credit information received allows the bank to provide room for negotiation with the borrower to reduce lending rates, to ration credit based on the sector borrowing limits or the headroom available for the

manager to lend and eventually for approval of the loan application when other bank conditions or criteria are met by the borrower. Demand for collateral from the borrower remains critical to the bank whether positive or negative information on the borrower is received. In addition, before CRB regulation and information sharing practice was introduced, demand for collateral was the tool mostly used alongside relationship management, also considered an alternative borrower disciplining device as suggested by (Brown & Zehnder, 2007). This shows that credit information on a borrower is critical and necessary in eliminating the problem of asymmetric information which is a catalyst to default risk, but it is not yet sufficient in the decision making process of the banks issuing loans and mitigating NPL levels in Kenya. Other factors are taken into consideration by the credit managers in the decision making. Neither positive nor negative credit information on the borrower, strongly influence the banks' decision to make provision for NPL or budget for monitoring of the borrower during the loan contract period. Overall it could mean that banks have not yet fully adopted information sharing as the only criteria for assessment of borrower, because the period under study represents early stages of adopting a new practice and the challenges that still persist are those of inaccurate information and lack of real-time information to assist with banks' decision making.

CBK could or may already be using the monthly returns of sector-wide data on NPL filed by CRBs to assess the levels of NPL for the entire banking sector to develop relevant regulation on credit risk for the banking sector.

Areas to be considered in the improvement of information sharing includes adopting technology by CRBs for easier, faster and real time access of data; expanding the scope of data collected for borrowers in both the formal and informal sectors for a more objective understanding of the borrowers' obligations; for banks to submit accurate and complete data without trying to protect their customers; CBK licensing more CRBs to allow for more innovative products that will assist banks in the decision making on borrowers and the sector in mitigating of NPL levels and for CBK to impose penalties on banks that submit inaccurate data to CRBs as inaccurate data continues to perpetuate an increasing NPL problem.

6.2 Recommendations

From the findings stated above, this study therefore makes two key recommendations. Firstly, CBK should not only make it punitive to banks who share inaccurate information but should also enable a competitive environment in the information sharing system by licensing more CRBs which will promote innovation, quality and reliability of information required by banks, other credit institutions and borrowers. With reliable information CRBs will generate

reliable and standardised credit scores useful to the banking sector and other sectors in assessing customers in the credit market while creating incentives for good credit scoring customers. This will contribute to deepening Kenya's credit information index which in 2013 was zero (0) on a 0-8 scoring in World Bank's 2013 World Development indicators. Secondly, in the long run, with reliable full file information, commercial banks should provide room for negotiation down the bank lending rates for borrowers. This will enhance access to credit for most Kenyans who shy away from high commercial bank lending rates for their investment projects.

6.3 Area of further research

From the study, the peculiar behaviour in a multiple regression model of macroeconomic factors where overall annual inflation is significant contradicting the expectation of a low correlation with NPL levels while real GDP shows non-significance contradicting the expectation of an inverse relationship with NPL would be an area of further research.

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Appendices:

Appendix I: Letters of Introduction to CBK and Commercial Banks

21st April, 2015

The Director,
Governors' Office,
Central Bank of Kenya, Nairobi

Dear Sir/Madam,

RE: REQUEST FOR 1-HOUR INTERVIEW FOR ACADEMIC PURPOSES: CBK - BANK SUPERVISION DEPARTMENT

I am an MBA student of Strathmore Business School, conducting research on the Kenya's banking sector. My research looks to ***evaluating the role of information sharing*** **on mitigating non-performing loans** ***in Kenya's Banking Sector.*** My research design and data collection includes a survey of 43 commercial banks (currently ongoing), an interview of the 2 licensed credit reference bureaus and an interview with CBK-Bank Supervision department. I am undertaking the data collection process in April, 2015.

With this letter I make a special request for interview with an officer of CBK-Bank Supervision team, as part of this study. If possible, in the data collection **period between 21st April and 4th May, 2015.**

The interview will guide me in understanding the role of information sharing in Kenya's banking sector, especially from the supervision perspective since operationalisation of the CRB regulation 2008 and 2013. In addition, the findings of the study will not only contribute to advancing the academic knowledge on the subject but will also be useful to CBK.

The interview should take not more than one hour of the officer's time.

To familiarise yourself with the content of the interview, please find attached the questionnaire that will guide the interview. In addition I have enclosed a letter of facilitation by Strathmore Business School for transparency on this exercise.

Kindly advice acknowledge receipt and advise me which would be a suitable day and time to meet with a member of Bank Supervision team to assist me with the study. This is most appreciated.

I can be contacted directly on this email address naomi.w.maina@gmail.com or my mobile number 0722-813730.

I look forward to your favourable response to facilitate my data collection process.

Sincerely,
Naomi Maina

24th April, 2015

The Credit Manager,
Credit Department,
Habib Bank Limited,
Nairobi

Dear Sir/Madam,

RE: SURVEY QUESTIONNAIRE COMPLETION – ROLE OF INFORMATION SHARING IN MITIGATING NON-PERFORMING LOANS IN KENYA'S BANKING SECTOR

I am an MBA student of Strathmore Business School, conducting research on the Kenya's banking sector. My research looks to ***evaluating the role of information sharing*** **on mitigating non-performing loans** ***in Kenya's Banking Sector****.* My research design and data collection includes a survey of 44 commercial banks an interview of the 2 licensed credit reference bureaus and an interview with CBK-Bank Supervision department. I am undertaking the data collection process in April, 2015.

Participation in this survey and the views of Habib Bank as a key player in Kenya's banking sector are important to the research.

With this letter I therefore seek your special assistance in completion of the questionnaire as the Credit Manager at Habib Bank from your experience in credit management. This is highly appreciated!

It should only take approx. 15 minutes of your time to complete. In case you find any challenges in the completion of the same, your feedback is most welcome too.

I can be contacted directly on this email address naomi.w.maina@gmail.com or my mobile number 0722-813730.

Please find attached the self-administered questionnaire and a letter of facilitation by Strathmore Business School for transparency on this exercise.

I look forward to your favourable response to facilitate my data collection process. If possible, kindly respond by 28th April, 2015.

Sincerely,

Naomi Maina
0722-813730

Appendix II : Secondary data

Quarter / Year	Gross Loans	Gross Loans (Index)	Net NPL	Net NPL (Index)	Specific Provision	Specific Provision (Index)	Average Bank Lending Rate %	% Real GDP	Overall Annual Inflation	Asset Quality Ratio (Net NPL/ Gross Loans)
Dec-04	384.8	100.0	34.9	100.00	36.9	100.0	12.25	5.3	11.62	34.9
Mar-05	429.9	111.7	27.9	79.94	39.1	106.0	12.84	2	13.07	27.9
Jun-05	399.7	103.9	31.2	89.40	38.3	103.8	13.09	7.3	15.1	31.2
Sep-05	409	106.3	32.6	93.41	38.7	104.9	12.83	8.4	13.24	32.6
Dec-05	416.1	108.1	31.3	89.68	35.2	95.4	13.16	5.9	9.87	31.3
Mar-06	423.6	110.1	24.6	70.49	38.7	104.9	13.33	5.8	8.61	24.6
Jun-06	439.1	114.1	26.6	76.22	40.4	109.5	13.79	6	6.33	26.6
Sep-06	456.5	118.6	25.9	74.21	40.8	110.6	13.54	8.2	5.7	25.9
Dec-06	474.8	123.4	25.5	73.07	39.4	106.8	13.74	5.2	6.39	25.5
Mar-07	484.8	126.0	24.6	70.49	40.4	109.5	13.56	7.4	4.99	24.6
Jun-07	470	122.1	22.7	65.04	27	73.2	13.14	8.7	4.46	22.7
Sep-07	492.4	128.0	20.3	58.17	22.8	61.8	12.87	6.5	4.57	20.3
Dec-07	540.5	140.5	21.1	60.46	22.8	61.8	13.32	6	4.27	21.1
Mar-08	554.2	144.0	20	57.31	23.6	64.0	14.06	4.75	6.13	20
Jun-08	597.7	155.3	20.5	58.74	23	62.3	14.06	3.5	9.86	20.5
Sep-08	635.9	165.3	21.4	61.32	22.1	59.9	13.66	3.5	13.02	21.4
Dec-08	685.9	178.2	23.2	66.48	24.2	65.6	14.87	4.6	16.27	23.2
Mar-09	694.4	180.5	25.5	73.07	26.9	72.9	14.87	5.7	17.07	25.5
Jun-09	712.4	185.1	25.6	73.35	25.2	68.3	15.09	1.2	15.11	25.6
Sep-09	729.7	189.6	27.3	78.22	26.2	71.0	14.74	0.3	12.41	27.3
Dec-09	771.9	200.6	28.6	81.95	23.4	63.4	14.76	3.4	9.24	28.6
Mar-10	789.5	205.2	27.8	79.66	26.1	70.7	14.8	5.3	7.03	27.8
Jun-10	828.9	215.4	24.3	69.63	26.5	71.8	14.39	7	5.43	24.3
Sep-10	878.8	228.4	22.2	63.61	28.9	78.3	13.98	9.5	4.4	22.2
Dec-10	911.8	237.0	20.3	58.17	28.3	76.7	13.87	11.5	3.96	20.3
Mar-11	994.7	258.5	20.5	58.74	28.5	77.2	13.92	10.6	4.49	20.5
Jun-11	1083.1	281.5	20.9	59.89	27	73.2	13.91	7.4	6.88	20.9
Sep-11	1192.5	309.9	19.7	56.45	27.2	73.7	14.79	4.2	10.18	19.7
Dec-11	1205.5	313.3	18.5	53.01	23.4	63.4	20.04	3.1	14.02	18.5
Mar-12	1235.7	321.1	17.1	49.00	25.8	69.9	20.34	3.4	16.45	17.1
Jun-12	1289.3	335.1	20	57.31	25.7	69.6	20.3	4.2	15.97	20
Sep-12	1316.8	342.2	22	63.04	27.2	73.7	19.73	4.9	13.29	22
Dec-12	1361.3	353.8	20.7	59.31	28.1	76.2	18.15	5.1	9.38	20.7
Mar-13	1402.4	364.4	27.7	79.37	28.7	77.8	17.73	7	6.33	27.7
Jun-13	1454.9	378.1	33.1	94.84	29.6	80.2	16.97	8.7	4.56	33.1
Sep-13	1522.7	395.7	35.1	100.57	29.3	79.4	16.86	4.3	4.75	35.1
Dec-13	1605.2	417.2	35.8	102.58	28.6	77.5	16.99	3.2	5.72	35.8

Appendix III : Results of KMO measure of sampling adequacy and Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.501
Bartlett's Test of Sphericity	Approx. Chi-Square	74.962
	df	36
	Sig.	.000

Appendix IV: Self-Administered Questionnaire

SURVEY QUESTIONNAIRE

An Evaluation of the Role of Information Sharing in Mitigating Non-Performing Loans for Commercial Banks in Kenya

18th April, 2015

As part of research for my Masters in Business Administration (MBA) program at Strathmore Business School, I am conducting this survey of all 43 commercial banks in Kenya.
I seek to understand and **evaluate the role of information sharing in mitigating non-performing loans for commercial banks in Kenya**. This is particularly following the operationalisation of the Credit Reference Bureau regulation in 2009 and 2013 and the licensing by Central Bank of Kenya, of 2 Credit Reference Bureaus to date for commercial banks use.

I highly appreciate your taking the time to complete the survey. It should take only about 15 minutes of your time.

Your responses will remain confidential. Your responses will not be identified by the individual and remain completely anonymous. All responses of 43 banks will be compiled together and analysed as from the entire banking sector.

If you have any questions or concerns, you can contact me, Naomi Maina to discuss them on mobile number 0722-813730 or on email naomi.w.maina@gmail.com

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PART I: GENERAL INFORMATION

Name of Bank: _____

Year of commencement of bank's operations in Kenya: _____

Role/designation of respondent: _____

Date of survey completion: _____

In case of any clarification I may need to make with you, kindly assist me with you contact details:
Email: _____
Mobile: _____ (optional)

PART II: Factors affecting the levels of non-performing loans

1. When does a loan qualify as a non-performing loan? *(please tick one of the following)*
   - □ 30 - 60 days of overdue principle or interest payment
   - □ 60 - 90 days of overdue principle or interest payment
   - □ 30 - 90 days of overdue principle or interest payment
   - □ More than 90 days of overdue principle or interest payment

2. From your observation on credit risk management, to what extent do the following factors affect and increase the levels of non-performing loans for the bank?
   Please give a score to each of the factors below:
   (on a scale of 1 to 5; 1=not much,2=little, 3=somewhat, 4=much, 5=very much)

Factors affecting increasing levels of NPL	Not much (score=1)	Little (score =2)	Somewhat (score =3)	Much (score=4)	Very much (score=5)
Negative economic growth					
Unemployment					
High bank lending rates					
Insufficient information by the bank on the borrower making a loan application					
The bank's criteria used to grant credit /loans					
Inadequate screening of loan applications					
Cost of monitoring the borrower in the loan contract period					
Managers decision to provide or not provide a buffer for non-performing loans					
Regulation on provision for bad debt					

PART III: Role of Information Sharing in mitigating non-performing loans for the bank

3. There are 2 Credit Reference Bureaus licensed by CBK to date.
   Please indicate the relationship of the bank with the credit reference bureaus by answering the questions below.

3.1 Does the bank submit confidential borrower information to both Credit Reference Bureaus?

☐ Yes ☐ No

3.2 What type of borrower information does the bank submit to CRBs?

☐ Negative ☐ Positive ☐ both ☐ none of the options

3.3 What is the bank's frequency of submission of the borrower information to the CRB?

☐ Twice a month ☐ Monthly ☐ Every 2 months ☐ Quarterly ☐ Annually

4. What are the reasons the bank has had for enquiries at CRB of borrower information at the CRB?

   ☐ Loan application
   ☐ Monitoring of borrower in the duration of the loan contract
   ☐ Other……
   ……

5. With the operationalisation of the Credit Reference Bureau regulation, were there significant changes to the bank operations to facilitate information sharing?

   ☐ Yes ☐ No

   If yes, what sorts of changes have been made? *(you can tick more than one)*

   ☐ Change of information management system
   ☐ Structure and role of the credit management department
   ☐ Further disclosure of the bank's financial information
   ☐ Other……
   ……

6. In 2013, CBK regulations expanded the definition of credit information as ''full file'' to include both positive credit information and negative credit information

6.1 Does the bank receive both positive and negative credit information from the CRBs?

☐ Yes ☐ No

6.2 What are the likely decisions of the bank on receiving negative credit information of a borrower? *(you can tick more than one)*

- ☐ Credit rationing
- ☐ Increase in the bank's lending rate
- ☐ Increase of provision for bad debt
- ☐ Demand for collateral
- ☐ Increase budget for monitoring of borrower throughout the loan contract period
- ☐ Complete rejection of the loan application
- ☐ Other……

……

6.3 What are the likely decisions of the bank on receiving positive credit information of a borrower? *(you can tick more than one)*

- ☐ Credit rationing
- ☐ Reduction in lending rate for the borrower
- ☐ Decrease of provision for bad debt
- ☐ Waiver on collateral
- ☐ Decrease budget for monitoring of borrower throughout the loan contract period
- ☐ Immediate approval of the loan application
- ☐ Other……

……

7. Prior to CRB regulation and licensing of CRBs, the bank used other types of tools or processes to assess the credit worthiness of borrowers before issuing of loans.
Which tools or processes were used by the bank to assess borrowers?

- ☐ Relationship management
- ☐ Collateral
- ☐ Credit rationing
- ☐ Fees
- ☐ Other……

……

8. Has assessment of borrowers improved with the existence and use of credit reference bureaus information database?

☐ Yes ☐ No

If Yes, what effect has it had on the bank's non-performing loans?

☐ Positive ☐ Negative

Please explain:

……

……

.....

9. What has been the effect on the bank's cost for monitoring the borrower, following the banks use of CRBs borrower credit information?

- ☐ less than 25% increase in cost of monitoring
- ☐ approximately 50% increase in cost of monitoring
- ☐ more than 50% increase in cost of monitoring
- ☐ less than 25% decrease in cost of monitoring
- ☐ approximately 50% decrease in cost of monitoring
- ☐ more than 50% decrease in cost of monitoring
- ☐ No effect on cost of monitoring

10. In conclusion, what in your opinion are strategies that you would propose to improve information sharing towards mitigating non-performing loans for the bank? Or for Kenya's banking sector?

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Thank you for completing the survey.

Again, I assure you that the information will be treated with the strict confidentiality.

Kindly email the questionnaire back to me on email naomi.w.maina@gmail.com

Appendix V: Semi structured Questionnaires

INTERVIEW QUESTIONNAIRE

An Evaluation of the Role of Information Sharing in Mitigating Non-Performing Loans for Commercial Banks in Kenya

13th April, 2015

As part of research for my Masters in Business Administration (MBA) program at Strathmore Business School, I am conducting this interview in addition to a survey of all 43 commercial banks in Kenya and the Central Bank of Kenya.

I seek to understand and **evaluate the role of information sharing in mitigating non-performing loans for commercial banks in Kenya**. This is particularly following the operationalisation of the Credit Reference Bureau regulation in 2009 and 2013 and the licensing by Central Bank of Kenya, of 2 Credit Reference Bureaus to date for commercial banks use.

I highly appreciate your taking the time to complete the survey. It should take only about 15 minutes of your time.

Your responses will remain confidential. Your responses will not be identified by the individual and remain completely anonymous. All responses of 43 banks will be compiled together and analysed as from the entire banking sector.

If you have any questions or concerns, you can contact me, Naomi Maina to discuss them on mobile number 0722-813730 or on email naomi.w.maina@gmail.com

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PART I: GENERAL INFORMATION

Name of Credit Reference Bureau: _____

Year of commencement of CRB's operations in Kenya: _____

Designation of respondent: _____

Date of interview: _____

In case of any clarification I may need to make with you, kindly assist me with you contact details:

Email: _____

Mobile: _____(optional)

PART II: Commercial Banks Activity

A. Submission of Borrower Information

1. How many commercial banks are registered with your Credit Reference Bureau?

   ……

2. What are the key products offered by the Bureau to subscribers?

   ……

   ……

   ……

3. How often do commercial banks submit borrower information to the bureau?
   - Twice a month
   - Monthly
   - Every two months
   - Quarterly
   - Half yearly
   - Annually

4. How does the bureau validate as accurate and reliable, borrower data received from commercial banks?

   .....

   .....

5. Are there instances of incomplete data submitted?
   - Yes
   - No

   How does the bureau correct this position?

   .....

   .....

6. Of the data stored and managed by the Bureau as at 31st December,2014, what is the proportion of negative credit information to positive credit information, following regulation on ‘’full file’’ credit information?:
   - 50% positive ; 50% negative credit information
   - 75% positive ; 25% negative credit information
   - 25% positive ; 75% negative credit information
   - 100% negative credit information
   - 100% positive credit information

7. How many submissions of borrower information have been received by the Bureau from commercial banks in the following period;

Year as at 31st December	No. of submissions by commercial banks
2009	
2010	
2011	
2012	
2013	
2014	

B. Inquiry on Borrower Credit Information

8. What are the key reasons for enquiries at CRB of borrower information by commercial banks?

- Loan application
- Monitoring of borrower after loan contract
- Other……
  ……

9. Has it been possible since 2013, for the Bureau to provide ''full file'' reports?

- Yes
- No
- Sometimes
- Not yet

10. How many inquiries for reports on customer credit history have been made by commercial banks in the following period;

Year as at 31st December	No. of Inquires for reports on credit history of customers by commercial banks
2009	
2010	
2011	
2012	
2013	
2014	

11. What action does the Bureau take in the event the credit score given by the Bureau is challenged as inaccurate by either the customer or the subscribing commercial bank?
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……

PART III: Central Bank of Kenya Activity

12. How often does Central Bank request from the Bureau, credit reports on commercial banks non-performing loans?
    - Monthly
    - Every two months
    - Quarterly
    - Half yearly
    - Annually

13. Of the different categories of information held by CRB, what type of information do you find useful to share with CBK or is of interest to CBK?

    ……
    ……
    ……
    ……

14. In conclusion, what in your opinion are strategies you could propose to improve information sharing for the banking sector in Kenya?

    ……
    ……
    ……
    ……
    ……

Thank you for your time in taking the interview. Again, I assure you that the information will be treated with the strict confidentiality.

INTERVIEW QUESTIONNAIRE

An Evaluation of the Role of Information Sharing in Mitigating Non-Performing Loans for Commercial Banks in Kenya

16th April, 2015

As part of research for my Masters in Business Administration (MBA) program at Strathmore Business School, I am conducting this interview as part of a wider survey of all 43 commercial banks in Kenya.

I seek to understand and **evaluate the role of information sharing in mitigating non-performing loans for commercial banks in Kenya**. This is particularly following the operationalisation of the Credit Reference Bureau regulation in 2009 and 2013 and the licensing by Central Bank of Kenya, of 2 Credit Reference Bureaus to date for commercial banks use.

I highly appreciate your taking the time for an interview with me on the subject. It should take only about 30 minutes of your time.

Your responses will remain confidential. Your responses will not be identified by the individual and remain completely anonymous and for academic purposes only. All responses will be compiled together and analysed as from the entire banking sector.

If you have any questions or concerns, you can contact me, Naomi Maina to discuss them on mobile number 0722-813730 or on email naomi.w.maina@gmail.com

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PART I: GENERAL INFORMATION

Name of Bank: _____

Year of commencement of bank's operations in Kenya: _____

Role/designation of respondent: _____

Date of survey completion: _____

Incase of any further clarification I may need to make with you after completion of the survey, kindly assist me with your contact details:

Email: _____

Mobile: _____(optional)

PART II: Factors affecting the levels of non-performing loans

Literature recommends adequate bank supervision and appropriate legal framework as one way of reducing risk and preventing sharp increases to non-performing loans in the banking sector. Factors considered as affecting levels of NPL include both *macroeconomic conditions* like GDP and unemployment, as well as *bank-specific factors* such as internal policies and criteria for loan assessment, information asymmetry, debt provisioning as buffer for NPL among others.

1. What is your view on the asset quality of commercial banks in Kenya from the perspective of loan loss provision levels disclosed by commercial banks in Kenya?

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……
……

2. From CBK assessment, is the level of provisioning by banks sufficient for the risk of non-performing loans to a growing loan portfolio?

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……
……

3. In 2008 and further in 2013, CBK enacted the Credit Reference Bureau regulation. Can this be interpreted that CBK considers the information sharing a critical factor affecting the levels of NPL in the banking sector?

   Yes No

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……

PART III: Role of Information Sharing in mitigating non-performing loans for the bank

4. Literature suggests that the risk of default by borrowers increases with the degree of assymetrical character of information.

4.1 What do you think would be a reason for the behaviour of NPL in 2013 where the ratio of NPL/gross loans increased to 5.2% from 4.7% in 2012. This is as reported in the 2013 CBK Annual Supervision Report?

……

……

4.2 Do you think that having the CRB active and information accessed by commercial banks will be able to corrrect the problem of information assymetry for commercial banks?

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……

4.3 World Bank's 2013 World Development indicators show that Kenya's score for depth of credit information index was zero (0) on a 0-8 scoring. Do you think that enforcement of the CRB regulation 2008 and 2013 will help improve this position?

☐ Yes ☐ No

If so, how?

……

……

……

……

4.4 Through the CRB regulations, 2013 CBK expanded the definition of credit information to ''full file'' to include both "negative and ''positive information''. This was intended to 'cater for some of the challenges that commercial banks were facing'.

What challenges were the commercial banks facing?

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Has CBK observed any impact of this change in 2014? *(the CBK Annual Supervisory Report 2014 is not yet available online)*

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PART IV: Access of credit information from Credit Reference Bureaus

5. CBK in 2004 adopted the risk-based supervisory approach.

5.1 Has CRB operations directly benefited CBK supervision of commercial bank sector?

 Yes ☐ No

5.2 What is CBKs frequency of accessing CRB data from the CRBs?

- Monthly
- Quarterly
- Half-yearly
- Annually

5.3 Has the quality of information in CRBs database been useful to CBK as a tool for;

(you can tick more than one as appropriate)

- Off-site surveillance?
- On-site surveillance?
- Assessing the extent of the NPL problem in the banking sector?
- Analysing risk to the sector?
- Monitoring of commercial banks?
- Informing new rules & regulations?
- Amendment of rules and regulation?

6. With the aim of reducing non-performing loans risk for the banking sector, what types of interventions have resulted from the CBK use of credit information from the CRBs?

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7. What in your opinion has so far been the overall impact in Kenya's banking sector, of these reforms on information sharing and enforcement of the Credit Reference Bureau regulation?
   - Mitigating the incidence of NPL?
   - Reduced interest or lending rates?
   - Increased access to credit?
   - Disciplined borrowers?
   - Improved competition within the banking sector?
   - Any other?

     ……
     ……
     ……
     ……

Thank you for your cooperation and response to the interview. Again, I assure you that the information will be treated with the strict confidentiality.

Appendix VI: Target Commercial banks and mortgage Financial Institution

#	Commercial Banks	Peer
1	Kenya Commercial Bank Ltd	Large
2	Standard Chartered Bank Ltd	Large
3	Barclays Bank of Kenya Ltd	Large
4	Co-operative Bank of Kenya Ltd	Large
5	CFC Stanbic Bank Ltd	Large
6	Equity Bank Ltd	Large
7	Bank of India Ltd	Medium
8	Bank of Baroda Ltd	Medium
9	Commercial Bank of Africa Ltd	Medium
10	Prime Bank Ltd	Medium
11	National Bank of Kenya Ltd	Medium
12	Citibank N.A.	Medium
13	Bank of Africa Ltd	Medium
14	Chase Bank Ltd	Medium
15	Imperial Bank Ltd	Medium
16	NIC Bank Ltd	Medium
17	Guaranty Trust Bank Ltd	Medium
18	I & M Bank Ltd	Medium
19	Diamond Trust Bank Ltd	Medium
20	Family Bank Ltd	Medium
21	Ecobank Ltd	Medium
22	Housing Finance	Medium
23	Habib Bank Ltd	Small
24	Oriental Commercial Bank Ltd	Small
25	Habib A.G. Zurich	Small
26	Middle East Bank Ltd	Small
27	Dubai Bank Ltd	Small
28	Consolidated Bank of Kenya Ltd	Small
29	Credit Bank Ltd	Small
30	Trans-National Bank Ltd	Small
31	African Banking Corporation Ltd	Small
32	Giro Commercial Bank Ltd	Small
33	Equatorial Bank Ltd	Small
34	Paramount Universal Bank Ltd	Small
35	Jamii Bora Bank Ltd	Small
36	Victoria Commercial Bank Ltd	Small
37	Guardian Bank Ltd	Small
38	Development Bank of Kenya Ltd	Small
39	Fidelity Commercial Bank Ltd	Small
40	Charterhouse Bank Ltd	Small
41	K-Rep Bank Ltd	Small
42	Gulf African Bank Ltd	Small
43	First Community Bank Ltd	Small
44	UBA Kenya Bank Ltd	Small
	SUMMARY by size of banks	
	Large Banks	6
	Medium sized banks	16
	Small banks	22
	Total No. of commercial banks	**43**

Source: CBK Annual Supervisory Report, 2013