

**THE EFFECT OF CREDIT INFORMATION SHARING ON THE
NON PERFORMING LOANS AMONG COMMERCIAL BANKS IN
KENYA**

BY

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DECLARATION

I **OCHARO FRANK ONGOSI** do hereby declare that this project is my original work and to the best of my knowledge has not been submitted for the award of a degree in any other university.

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This research project is submitted for examination with my approval as a university supervisor

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ABSTRACT

Commercial banks in Kenya have had a high rate of loan default from the borrowers which have caused significant losses to the banks. This is attributed to existence of information asymmetry where commercial banks have varied credit information and credit history about their borrowers. The credit seekers have taken this shortfall to get loans from different commercial banks which increases their rate of default because they might fail to service back all the loans. This study determines the effect of credit information sharing on the non performing loans among Kenyan commercial banks.

The current study used data collected from secondary sources of published financial statements over the period of 2008 to May 2013 and employed a bivariate regression analysis. Data was captured and analyzed using SPSS. The results indicate a negative effect that is non performing loans tend to reduce with increase in credit information sharing. The results provide significant effect of credit information sharing on non-performing loans.

The results concur with literature which provides a positive effect of credit information sharing on non-performing loans, therefore Central Bank of Kenya and commercial banks through supervision and loan monitoring can reduce the level of non-performing loans by increasing credit information sharing by formulating rules and regulations to register more credit reference bureaus to enhance credit information sharing environment.

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ABBREVIATIONS

CBK	-Central Bank of Kenya
CIS	-Credit Information Sharing
CRA	-Credit Rating Agency
CRBs	-Credit Reference Bureau
CRSPs	-Credit Reporting Service Provider
FSD	-Financial Sector Deepening
IFC	-International Finance Corporation
IS	-Information Sharing
KBA	-Kenya Bankers Association
KES/KSH	-Kenya Shillings
MFI	-Microfinance Institutions
NPLs	-Non-Performing Loans
SACCO	-Savings and Credit Co-operative

CHAPTER ONE:

INTRODUCTION

1.1 Background of the Study

A bank that lends money to consumers faces two types of risk; risk of paying the loan earlier than the agreed time and the risk of default (Carling, Tor, and Kasper, 2001). To curb the risk of defaults, lenders call for security which they can use as a last resort to recover fully or partially the funds advanced (Mituga, 2011). Unsecured loans therefore, pose a higher risk relative to secured loans. What then should lenders do to lower higher risks associated with unsecured lending? According to the theoretical literature, the answer lies in the problem of asymmetrical information: borrowers know much more than lenders about their own ability and willingness to repay.

Lending institutions, either public or private, consider certain characteristics of potential borrowers before loan/credit of any kind is granted. Holden (1985), argues that the most important qualification for successful lending is the ability to judge the character and credit-worthiness of borrowers. Research suggests that information sharing reduces loan interest and default rates and can have disciplinary effects because it encourages borrowers to try harder to meet obligations. Credit reporting agencies and bureaus can therefore fill a dual role as both information clearinghouses and enforcers of contracts.

1.1.1 Credit Information Sharing

The current view of credit bureaus and credit information sharing is primarily as a debt collection tool. The primary benefits are: a mechanism to identify and avoid ‘serial defaulters’; a mechanism to pressurize clients to meet their loan obligations; and a mechanism to improve the ‘repayment culture’. “Credit bureaus” (sometimes called “credit reference agencies”) are typical voluntary mechanisms: they are information brokers, which operate on the principle of reciprocity, collecting, filing and distributing the information supplied voluntarily by their members. The timeliness and truthfulness of the data reported by lenders to credit bureaus is enforced invariably by threatening deviants that they will be excluded from access to the common data base (Padilla and Pagano, 2000).

In markets faced with challenges of information asymmetry CRSPs are mandated to perform the crucial functions of gathering and distributing reliable credit information. Lenders often lack the necessary information to assess the creditworthiness of potential customers, including a lack of reliable and unique identification for individuals and businesses. Most importantly CRBs may be used as vehicles to build a credit track records that become part of the borrowers’ “reputation collateral” which may be used as a substitute to physical collateral to access credit. There is need to include all credit providers and utility service providers in credit information sharing as a way of improving its quality as “reputation collateral” (Miller, 2003).

1.1.2 Non-Performing Loans

According to Kroszner (2002), non-performing loans are closely associated with banking crises. Sultana (2002), also links the Japanese financial crisis to non-performing loans. According to Him, Japanese banks still suffer under the weight of thousands of billions of yen of bad loans resulting from the collapse in asset prices a decade ago in the country's financial system.

Brownbridge (1998), states that most of the bank failures were caused by non-performing loans. Arrears affecting more than half the loan portfolios were typical of the failed banks. Many of the bad debts were attributable to moral hazard: the adverse incentives on bank owners to adopt imprudent lending strategies, in particular insider lending and lending at high interest rates to borrowers in the most risky segments of the credit markets.

Non-performing loans can be treated as undesirable outputs or costs to a loaning bank, which decrease the bank's performance (Chang, 1999). Controlling non-performing loans is very important for both the performance of an individual bank (McNulty, Akhigbe, and Verbrugge, 2001) and the economy's financial environment.

1.1.3 Effect of Credit Information Sharing on Non Performing Loans

According to Barron & Staten (2003), greater availability of information reduces default rates, improves access to credit. With limited access to inclusive data, lenders are also concerned that borrowers might accumulate many loans from multiple lenders-potentially

resulting in their over-indebtedness and leaving lenders with an unacceptable large portfolio of non-performing loans. As a way of minimising the risk of default lenders need information on the creditworthiness of such borrowers. Credit reporting service providers can therefore lead to reduction of information asymmetry, thus reducing default rate.

Theoretical work by Padilla and Pagano (1997, 2000), analyzes the effects of information sharing between lenders in credit markets. They suggests that the exchange of blacklists of defaulting borrowers between lenders can be an effective discipline device to mitigate various forms of moral hazard, reducing interest rates in credit markets, while Vercammen (1995), demonstrates that the sharing of shorter credit histories is optimal for mitigating moral hazard, preventing borrowers from free riding on good reputation.

Empirical work by Brown, Jappelli, and Pagano (2007), using firm level panel data in transition economies, has found that the cost of credit declines as information sharing increases between lenders (McIntosh and Wydick, 2007). This is also confirmed by Kalberg and Udell (2003), who document that trade credit history in Dun & Bradstreet's reports improves default predictions relative to financial statements alone. Also Cowan and De Gregorio (2003), find that in Chile positive and negative information in credit reports contributes to predict defaults.

Also Jappelli and Pagano (2005), asserts that credit information sharing about borrowers' characteristics and their indebtedness can have important effects on credit markets

activity. It improves the banks' knowledge of applicants' characteristics and permits a more accurate prediction of their repayment probabilities. Therefore, CRBs address the problem of non-performing loans by reducing the extent of asymmetric information by making borrowers credit history available to potential lenders who may use it to avoid advancing credit to high risk individuals, those with poor repayment histories.

According to Padilla and Pagano (2000), in principle, exchanging information about borrowers can have four effects: (i) improve banks' knowledge of applicants' characteristics, easing adverse selection problems; (ii) reduce the "informational rents" that banks could otherwise extract from their customers; (iii) act as a borrower discipline device, by cutting insolvent debtors off from credit; (iv) eliminate or reduce the borrowers' incentive to become "over-indebted" by drawing credit simultaneously from many banks without any of them realizing.

1.1.4 Commercial Banks in Kenya

Collapse of many commercial banks in Kenya since 1986 has been attributed to non-performing loans (Waweru & Kalani, 2004). This challenge of non-performing loans prompted CBK and other stakeholders like KBA, to amend the Banking Act (Cap 488 Laws of Kenya) to allow for sharing of information regarding non-performing loans. Section 31 (4) of the Banking Act provides for creation of credit reference bureaus(CRBs) as a vehicle for information sharing for purposes of addressing the problem of non-performing loans (Mituga, 2011). This challenge of non-performin loans

is still in existence as noted by Jared Getenga in his statement published in the year 2009. He recognised the renewed focus on credit risk management in banks because of the instability associated with deteriorating credit standards, poor portfolio management or lack of attention to the changing credit standing of borrowers.

The Banking (Credit Reference Bureau) Regulations, 2008 provides that the information to be shared among the banks is any customer information concerning their customers' NPLs as well any other adverse information relating to a customer (negative information). In summary, the information to be shared among banks includes information on:-non-performing loans; dishonour of cheques other than for technical reasons; accounts compulsorily closed other than for administrative reasons; proven cases of frauds and forgeries; proven cases of cheque kitting; false declarations and statements; receiverships, bankruptcies and liquidations; credit defaults or late payments on all types of facilities; tendering of false securities; and misapplication of borrowed funds (CBK, 2010).

CRB Africa Ltd was licensed in February 2010 whilst Metropol Credit Reference Bureau Ltd, which is a wholly-owned Kenyan company, was licensed in April 2011, to facilitate credit information sharing services to institutions licensed under the Banking Act (CBK, 2011). CRBs help lenders make faster and more accurate decisions. They complement the central role played by banks and other financial institutions through their services. (CBK, 2011)

According to CBK banking supervision report 2012, it documents that since the commencement of the Credit Information Sharing (CIS) mechanism in July 2010, all the 43 licensed commercial banks in Kenya and institutions under the Deposit Protection Fund Board continue to submit negative credit information to the licensed CRBs within the required timeframes. Further, the banks have incorporated the CIS mechanism in their credit appraisal systems by obtaining credit reports from the CRBs while appraising loan applications.

Further the report states cumulatively, a total of 2.3 million and 28,733 credit reports had been requested by banks and customers respectively from the two licensed CRBs as at 31st December 2012. The credit reports requested by banks stabilised during the year ended 31st December 2012 at 1,015,327 in comparison to 1,021,717 reports in the year ended 31st December 2011. On the other hand, credit report requests by customers increased by 305% from 5,607 in the year 2011 to 22,692 in the year 2012. The increased utilization of credit reports by banks are expected to reduce information search costs and subsequently offer competitive terms of borrowing to customers with a good credit track record (CBK, 2012).

1.2 Research Problem

This research project proposal explores the extent to which CIS usage is growing within commercial banks in Kenya. In particular it will focus on its effect on NPLs. According to CBK (1997), non performing loans are those loans that are not being serviced as per loan contracts and expose financial institutions to potential losses. CBK annual report, (2008) defines Credit information sharing as a process where banks and other credit

providers submit information about their borrowers to a credit reference bureau so that it can be shared with other credit providers. The Banking (Credit Reference Bureau) Regulations, 2008 provides that the information to be shared among the banks is any customer information concerning their customers' NPLs as well any other adverse information relating to a customer.

Theory suggests that credit information sharing provides a strong incentive for borrowers to repay debt (Klein, 1992). CIS improves the risk profile of borrowers and reduces default rates (Jappelli and Pagano, 2002). Barron & Staten (2003), show that greater availability of information reduces default rates, improves access to credit. Kallberg and Udell (2003), show that historical information collected by a credit bureau had powerful default predictive power. CIS between lenders reveals borrowers' debt exposure to all participating lenders; this reduces aggregate indebtedness as highly indebted individuals receive less credit (Bennardo, Pagano and Piccolo, 2009).

Global studies provide empirical support for the hypothesis that credit information sharing reduces default rates. Brown et al. (2008), show that credit information sharing reduces default rates using data from a panel of transition countries. Jappelli and Pagano (2002), on their survey of credit reporting in 43 countries show that credit levels are higher and default risk is lower in countries with credit information sharing. Cowan and De Gregorio (2003), found that in Chile positive and negative information in credit reports contributes to predict defaults. Kalberg and Udell (2003), who document that trade credit history in Dun & Bradstreet's reports improves default predictions relative to

financial statements alone. These results point to a positive effect of credit information sharing on defaults.

In Kenya, Wanjira (2010), shows that improved credit information sharing during loan application should be adopted as a management practice to improve performance of non performing loans in Kenyan commercial banks. Mucheke (2001), establishes that lack of CRBs contributed to NPLs in commercial banks in Kenya. All commercial banks in Kenya were faced with challenges of NPLs and they had adopted various strategic responses to address the threats posed by NPLs. Among strategies found to be adequate included review of financial information submitted by borrowers critically before lending and use of informal means to get additional information on borrowers (Kanyiri, 2005).

According to Miller (2003), the best predictor of future behavior is past behavior, this basic tenet of psychology explains the power of information contained in credit information registries, which provide detailed information on borrowers' past loan performance. To address the problems of information asymmetry and reduce cases of NPLs, Kenyan commercial banks have turned to CRBs which act as vehicles for credit information sharing for purposes of addressing the problem of non-performing loans (KCSI, 2012). Empirical research on the effect of credit bureaus in the banking sector of Kenya is very limited and do not include analysis of the effect of credit information sharing on the non performing loans. A relevant issue for empirical investigation therefore is what effect does credit information sharing has impact on the non performing

loans in Kenyan commercial banks? This study sets out to determine if indeed an effect exists.

1.3 Research Objective

To determine the effect of credit information sharing on the non performing loans among Kenyan commercial banks.

1.4 Value of the Study

The results of this study are aimed at making lenders, borrowers, policy makers and legislators to appreciate the role of CRBs in reducing NPLs. More so, the central bank on its supervisory role will be challenged to make sound policies to ensure stability in credit market to foster growth of the economy.

The results will challenge the policy makers and legislators to come up with policies and legal framework that will create an environment that will attract investors to form more CRBs or invest in the existing ones, encourage borrowers to embrace them in order to build their reputational collateral and the lenders to rely on their data for risk evaluation and management.

The study will also contribute considerably to a body of knowledge as it will provide a basis for further research on empirical assessment of CIS and NPLs in other financial sectors like SACCOs and MFIs in Kenya.

CHAPTER TWO:

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the theoretical overview, the information asymmetry theory, the theory of delegated monitoring discussion on CIS in Kenya and empirical overview to capture the effect of credit information sharing on non performing loans. This will assist in making testable predictions for this study.

2.2 Theoretical Review

This section summarizes the theory of information asymmetry and various existing literature from studies carried in the same area, the theory of delegated monitoring

2.2.1 The Theory of Information Asymmetry

According to Matthews and Thompson (2008), this strand of theory is based on the notion that the borrower is likely to have more information than the lender about the risks of the project for which they receive funds. This leads to the problems of moral hazard and adverse selection. These problems reduce the efficiency of the transfer of funds from surplus to deficit units. Adverse selection and moral hazards problems have led to significant accumulation of NPLs in commercial banks (Bester, 1994; Bofondi and Gobbi, 2003).

Banks provide a mechanism for long-term commitment, thus overriding the moral hazard and adverse selection problems. There is an absence of complete contracts, that is, it is not plausible to negotiate contracts that specify all possible outcomes. If a bank has a close relationship with its borrowers, then this enables the bank to have good information about future prospects and to take remedial action (other than foreclosure) in the event of the borrower experiencing problems. There is evidence that firms with close banking ties appear to invest more and to perform more efficiently than those without such ties (Matthews and Thompson, 2008, pp.45–46).

Under direct financing, it is necessary for a lender to collect information to try to redress the information asymmetry. However, information is costly to obtain and is a ‘public good’. In the absence of a bank, any purchaser of information about a borrower can easily sell or share that information. Also, the quality of information is difficult to ascertain so that the distinction between good and bad information is not readily apparent. Leland and Pyle (1977), argues that because of this, the price of information will reflect average quality, so any search for high-quality information will not be cost-effective. They argue that these problems can be resolved by a bank which uses information to buy and hold assets in its portfolio. In this way, information becomes a private good and not transferable, thus providing an incentive to gather information.

McIntosh and Wydick (2007), states that credit information systems that facilitate positive and negative information sharing between lenders yield three distinct effects: 1) a screening effect, 2) an incentive effect and 3) a credit expansion effect. The screening effect of a credit information system mitigates adverse selection problems and reduces portfolio default rates. The incentive effect also reduces default rates by mitigating problems of moral hazard. As CIS increases, more borrowers change their behavior and choose to take single rather than multiple loan contracts, thus reducing the high default associated with hidden debt.

Brown, Jappelli and Pagano (2008), echoes that banks can improve their knowledge of borrowers' past behavior and characteristics by exchanging information about their customers. Further they argue that positive and negative information sharing creates three types of borrowers: exposed borrowers, those who are screened from multiple loan contracting and as a result possess single loan contracts that are inferior to their perfect-information contract, defaulting borrowers, those who have defaulted on a previous loan, and clean borrowers, borrowers with clean credit records.

Pagano and Jappelli (1993), show that information sharing reduces adverse selection by improving the pool of borrowers. In their model, each bank has private information about local credit applicants but has no information about non-local credit applicants. The latter therefore face adverse selection. However, if banks exchange their information about their clients' quality, they can assess also the quality of non-local credit seekers, and lend to them as safely as they do with local clients. As a result, the default rate decreases.

Klein (1992), shows that information sharing can motivate borrowers to repay loans; borrowers are more likely to repay their debts because information about their defaults becomes available to all lenders through CRBs. In their model borrowers repay their loans because they know that defaulters will be blacklisted. Padilla and Pagano (2000), show that CIS creates a disciplinary effect. When banks share default information, default becomes a signal of bad quality for outside banks and Kalberg and Udell (2003), also point out that information exchange from multiple sources improves the precision of the signal about the quality of the borrower.

Vercammen (1995), show that if banks exchange information on defaults, borrowers are motivated to put more effort in their financed projects. In the model default is signal of bad quality and carries the penalty of higher interest rates, or no future access to credit. Bennardo, Pagano, and Piccolo (2008), also argue that CIS reduces the risk of over-borrowing as individual lenders can access information on the overall indebtedness of borrowers from all lending sources.

Padilla and Pagano (1999), show that CIS creates a disciplinary effect. They argue that when banks share default information it becomes a signal of bad quality for outside banks carrying the penalty of higher interest rates. The disciplinary effect arises only from the exchange of default information. When banks also share data on borrowers' characteristics, they actually reduce the disciplinary effect of information sharing: a high-quality borrower will not be concerned about his default being reported to outside banks

if these are also told that he is a high-quality client. Exchanging information about borrowers' characteristics may reduce adverse selection or temper hold-up problems in credit markets, and thereby reduce default rates.

Sharing of credit-related information has the benefit of reducing the information monopoly a lender has on its borrowers, banks with long-standing relationships with their borrowers know the credit history of those borrowers, while other lending institutions do not have access to this information. This allows the bank to charge higher interest rates and extract other rents from those high quality borrowers (Padilla and Pagano, 1997). Credit information sharing between lenders reveals borrowers' debt exposure to all participating lenders, eventually reducing aggregate indebtedness as highly indebted individuals receive less credit (Bennardo, Pagano, and Piccolo, 2009).

Stiglitz and Weiss (1981), show that the incentive by borrowers to undertake risky investments which increase a borrower's expected payoff, but on the other hand reduces the expected payoff to the lender. Another form of moral hazard that characterizes multiple loan contracting, in which borrowers may obtain more advantageous credit terms through taking hidden loans from different lenders, with each lender possessing information over only his own contract with a borrower (Jappelli and Pagano, 2000).

2.2.2 The Theory of Delegated Monitoring

The theory of delegated monitoring of borrowers is one of the most influential in the literature on the existence of banks. Defined broadly, 'monitoring' of a borrower by a bank refers to information collection before and after a loan is granted, including screening of loan applications, examining the borrower's ongoing creditworthiness and ensuring that the borrower adheres to the terms of the contract. A bank often has privileged information in this process if it operates the client's current account and can observe the flows of income and expenditure. This is most relevant in the case of small and medium enterprises and is linked to banks' role in the payments system (Matthews and Thompson, 2008, p.44)

Further Matthews and Thompson (2008), state that the key element in this theory is the analysis of the costs and benefits of monitoring. Delegating the monitoring gives rise to a new private information problem where the party monitoring as an agent has private information. This leads to delegation costs which must be less than the minimum of costs without monitoring and total costs of direct monitoring.

Central Bank of Kenya annual report (2008), defines Credit information sharing as a process where banks and other credit providers submit information about their borrowers to a credit reference bureau so that it can be shared with other credit providers. It enables the banks to know how borrowers repay their loans. This is also known as Credit Reporting. This idea of sharing information about credit report of customers was

conceived after many banks were indebted by the failure of customers to re-pay back the loan they got from the banks. This was associated by the information asymmetry that each bank had on its customers.

According to CBK bank supervision report (2008), the Kenyan banking sector was in the 80's and 90's saddled with a momentous Non-Performing Loans (NPLs) portfolio. This invariably led to the collapse of some banks. One of the catalysts in this scenario was "Serial defaulters", who borrowed from various banks with no intention of repaying the loans. Undoubtedly these defaulters thrived in the "information asymmetry" environment that prevailed due to lack of a credit information sharing mechanism. The Banking (Credit Reference Bureau) regulations 2008 were set up to govern licensing, operation and supervision of CRBs by the Central Bank of Kenya. The development of a sustainable credit information sharing industry is therefore recognized as a key component of financial sector reforms in almost all developing and emerging economies.

Commercial banks are the foundation of the payment system in many economies by playing an intermediary role between savers and borrowers. They further enhance the financial system by ensuring that financial institutions are stable and are able to effectively facilitate financial transactions. The main challenge to commercial banks in their operations is the disbursement of loans and advances. There is need for commercial banks to adopt appropriate credit appraisal techniques to minimize the possibility of loan defaults since defaults on loan repayments leads to adverse effects such as the depositors

losing their money, loss of confidence in the banking system, and financial instability (Central Bank of Kenya, 1997).

2.3 Empirical Evidence

Empirical literature has provided evidence that CIS is associated with lower default rate on both micro and macro levels. In addition, a growing body of empirical evidence supports the evidence that information sharing enhances credit market performance. The impact of CIS on credit performance has been tested by a cross country study. Based on their survey of credit reporting in 43 countries Jappelli and Pagano (2002), show that default rates are lower in countries where CIS is well established.

Empirical work by Brown, Jappelli, and Pagano (2007), using firm level panel data in transition economies, has found that the cost of credit declines as information sharing increases between lenders (McIntosh and Wydick, 2007). This is also confirmed by Kalberg and Udell (2003), who document that trade credit history in Dun & Bradstreet's reports improves default predictions relative to financial statements alone. Also Cowan and De Gregorio (2003), find that in Chile positive and negative information in credit reports contributes to predict defaults (Pagano & Jappelli, 2005).

McIntosh and Wydick (2009), empirically find that: overall default decreases marginally after credit bureau introduction. Jappelli and Pagano (2002), find in a cross-country estimation that information sharing reduces at-risk loans by 3 to 4 percentage points over a base rate of 7.7 percent. Luoto, McIntosh, and Wydick (2007), find a significant 3.3

percentage point decrease in the fraction of loans with any late intermediate payments, and also find that the trend on delinquency turns significantly negative when the bureau comes into use. The overall effect in the Guatemalan experimental work is indicative of a marginal reduction in default, but this result is smaller and less robust than expected (Luoto et al, 2007).

Padilla and Pagano (1997), using a two-period model where banks have private information about their borrowers find out that this private information confers advantage to banks and some market power over their customers. This results in hold-up problems. If the banks commit to exchange information about borrowers' types, however, banks restrain their own future ability to extract informational rents, leaving a larger portion of the surplus to entrepreneurs. As a result, clients will invest greater effort in their project, resulting in a lower default probability, lower interest rates and greater lending relative to the regime without information sharing.

Ahmad (2013), did a study to investigate corruption and CIS as determinants of NPLs- in State Bank of Pakistan and commercial banks. The study investigated the impact of corruption at economy level and institution level on the non-performing loans. The study also examined the association of information sharing between depositors, lenders and financial institutions. The study used time series data over the period of 2001 to 2010 and employed OLS method. The results provide no significant association of corruption and information sharing with non-performing loans. In summary the nature of the data used

may have guided the results, but literature provides significant impact of credit information sharing on non-performing loans, therefore State Bank of Pakistan and commercial banks can reduce the level of non-performing loans by reducing the chance of corrupt practices by following the rules and regulation of credit allocation, supervision and loan monitoring.

Wanjira (2010), set out to establish the relationship between NPLs management practices and financial performance of commercial banks in Kenya. The study was a census and used structured questionnaires to collect data. The data was fitted into a regression model which was run through SPSS to examine if indeed that relationship exists. Financial performance was taken as a dependent variable and credit risk assessment; improve loan allocation, corporate management, adoption of centralized management, effective human resources and character assessment were used as independent variables. The study established that commercial banks still faced problems of NPLs due to various factors among them; lax credit assessment, untrained personnel and incomplete assessment of customers strongly contribute to NPLs. The study also established a positive relationship. Improved credit information during loan application should be adopted as a management practice for non performing loans to improve performance in Kenyan commercial banks.

Mucheke (2001), did a study to identify determinants of NPLs in Kenya: the case for commercial banks in Kenya. The study inquired into the factors that were instrumental in the creation of NPLs and there contributions. Among the factors that were investigated

include interest rates, poor management, and decline of economic growth and lack of CRBs. Both primary and secondary data was collected using structured questionnaires and fitted into a regression model which was analyzed using excel. Proportion of NPLs as a percentage of total loan portfolios was used a dependent variable and the other factors were used as independent variables. The study establishes a positive effect that is high interest rates, lack of CRBs decline of economic growth among others contribute to NPLs in commercial banks in Kenya.

Mutie (2006), did a study to evaluate credit scoring practices and NPLs in Kenyan commercial banks used a census study of registered commercial banks in Kenya as at 31/12/2004 by CBK. The study used both primary and secondary data. Level of NPLs was extracted from financial statement for a period of five years and asset quality ratio was used as an indicator for NPLs. The data was fitted into a regression model then analyzed using SPSS. The study found out that majority of the commercial banks in Kenya have a default rate of 20% and most of the banks reorganized the default when the client has three late repayments. The study also found out that 61% of the banks indicated a moderate level of NPLs compared to 39% of the banks with low level of NPLs.

Kanyiri (2005), did a study on strategic responses of commercial banks in Kenya to challenges of NPLs. The goal was to identify the strategic responses undertaken by commercial banks to address the challenges of non-performing loans in Kenya. Primary data was used and was collected via structured questionnaires. The data was analyzed using excel. Use of informal means to get additional information on borrowers and

avoiding lending to seasonal or non-performing sectors were some of the strategies used in the study. The study established that indeed all commercial bank in Kenya were faced with challenges of NPLs and they had adopted various strategic responses to address the threats posed by NPLs. Among strategies found to be very greatly adequate included review of financial information submitted by borrowers critically before lending and use of informal means to get additional information on borrowers.

Ongweso (2006), studied the relationship between interest rates and NPLs in commercial banks in Kenya. The study used a population of 38 banks registered by CBK as at 31/12/2004. A period of five years was used that is 2000 to 2004. The study only used secondary data obtained from CBK annual reports. The data was fitted into a linear regression model and analyzed using SPSS to determine the causal relationship between interest rate and NPLs. The study found out a positive relationship that is the higher the interest rate the more the NPLs. These results are consistent with various studies as noted above.

2.4 Conclusion

Literature provides significant effect of credit information sharing on non-performing loans in micro and macro economic levels, Brown, Jappelli and Pagano (2006), confirm that theories offer predictions about the effect of CIS on the probability of default and interest rates. Empirical analysis of CRB data confirm that credit reporting reduces the selection costs of lenders by allowing them to more accurately predict individual loan

defaults (Barron and Staten, 2003; Kallberg and Udell, 2003; Cowan and De Gregorio, 2003; , 2004; Luoto et al, 2007).

Theory and empirical analysis so far, all predict that in one form or another, CIS tend to reduce defaults and therefore equilibrium interest rates at economy level. These theories offer no predictions about the effect of CIS on NPLs at institution level. However such prediction can be generated by considering credit reports requested per bank for screening and proportion of non-performing loans among commercial banks. This study sets out to fill that gap.

The dependent variable to be used in the study is NPLs/total advances for the measurement of NPLs. The existing studies relating the determinants of NPLs have used NPLs/total advances as the dependent variable, for instance, Dash and Kabra (2010); this study will also use NPLs/total advances as dependent variable. The independent variable to be used in the study is Credit information sharing to investigate the effect of credit information sharing on the NPLs. Yearly total credit reports requested per commercial bank from the two licensed CRBs will be used as a dummy for CIS. Credit reports have screening effect (McIntosh and Wydick, 2007).

CHAPTER THREE:

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology used for the study which has been discussed. These include the research design, population of study, data collection and data analysis techniques.

3.2 Research Design

This research was an exploratory study based on the following research question; what effect does the CIS have on NPLs among Kenyan commercial banks? Exploratory studies helps in developing a working hypotheses and formulating a problem for more precise investigation (Kothari, 1990). Quantitative research design will help in measuring and analysing the causal relationship between CIS and NPLs. A period of five years will be analyzed that is 2008 to 2013.

3.3 Population of the Study

The population of the study was a census survey which constituted all 43 Kenyan commercial banks registered and operational as at 31/12/2012. There are 43 commercial banks in Kenya and 1 Mortgage Company (appendix 1).

3.4 Data Collection

The study entailed the use secondary data obtained from the following sources; Data on non performing loans was obtained from CBK banking supervision department monthly economic reviews, quarterly reviews and annual reports. Monthly average ratios of NPLs to total loans were extracted from the financial monthly economic review reports. The data covered a period of 5 years from the year 2008 to May 2013 (appendix 2).

Data on credit information sharing was obtained from CBK banking supervision department. Monthly total credit reports requested by commercial banks from the two licensed CRBs were extracted from the reports. The data covered a period of 3 years from the year 2010 to May 2013 (appendix 3).

3.5 Data Analysis

The study aimed to find out the causal effect of credit information sharing on the non performing loans among commercial banks in Kenya. A bivariate regression analysis was used to establish link between NPLs and CIS. Data was captured and analyzed using Statistical Package for the Social Sciences (SPSS).

Trend analysis was carried out identify the movement of NPLs and request of credit reports among commercial banks and CRBs different sizes (appendix 2&3). In addition the test of significance (hypothesis test) was done to determine whether the effect will be significant.

The regression equation used was derived from the equation of a straight line which will result in model given below;

$$Y = \beta_0 + \beta_1 X_t + e_t$$

Where;

Y is the monthly average ratios of NPLs to total loans period “ t ”

X_t is the monthly total credit reports requested by commercial bank at time “ t ”

β_0 is the Y intercept

β_1 is the gradient of the line fitted to the data

e_t is the error term which represents the difference between the score predicted by the line at time “ t ” and the score that will be actually be obtained.

The study used the p-values of the F-test statistic to measure statistical significance. If p-values are very small (<0.05), there is strong statistical evidence in support of the alternative hypothesis. If p-values are large, there is insignificant statistical evidence. When large, you fail to reject the null hypothesis.

CHAPTER FOUR:

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

To achieve the objective of the study, the statistical package for social sciences (SPSS) was used to analyze the data. Regression analysis was used to determine the effect of CIS on NPLs among commercial banks in Kenya. NPLs were taken as a dependent variable (Y) and CIS (X) as the independent variable. Trend analysis of NPLs and CIS was done to determine the trends. The following sections therefore focus on the analysis of data, presentations, interpretations and discussion of the results that were obtained for the study.

4.2 Data Analysis and Findings

In order to achieve the objectives of the study data was captured and analyzed using Statistical Package for the Social Sciences (SPSS). SPSS generated the tables, the graphs and the figures shown in the following sections for NPLs trends and CIS trends. Further analysis was done on correlations of CIS on NPLs and regression analysis of CIS on NPLs done on SPSS. The following sections therefore will focus in detail on data analysis and findings; the trend on NPLs, trend on CIS, correlations of CIS on NPLs, regression analysis of CIS on NPLs data, and tests of significance of the results that were obtained for the study.

4.3 Summary of Findings and Interpretations

In the trend analysis of the proportion of NPLs to total loans, the study notes that before the introduction of CIS represented by Jan-2008 to Aug-2010 there is seasonality, but after Aug-2010 there has been a generally declining trend as shown in figure 4.4a and figure 4.5a. This declining trend of the proportion of NPLs can be majorly attributed to the introduction of credit information sharing in Kenya.

In the trend analysis of credit information sharing, the results show that the number of credit reports requests by commercial banks has been increasing as shown in figure 4.5. This increase can be attributed to the adoption of CIS as way of screening customers before loans are granted by commercial banks in Kenya as a way of eliminating serial defaulters.

Correlations results for the study indicates $r = -0.537$ as shown in table 4.6. Note that the sign of the correlation coefficient (+, -) defines the direction of the relationship. This study found a negative correlation which means that as credit reports increases, the proportion of NPLs decreases. The absolute value of the correlation coefficient measures the strength of the relationship thus $r = 0.537$ indicates a stronger degree of linear relationship between proportion of NPLs and CIS.

In the regression analysis of CIS on proportion NPLs to total loans, the study found out that R-Square= 0.288 as shown in table 4.7a. This can be interpreted to mean that 28.8% of the variance in the proportion of NPLs can be predicted by the number of credit reports

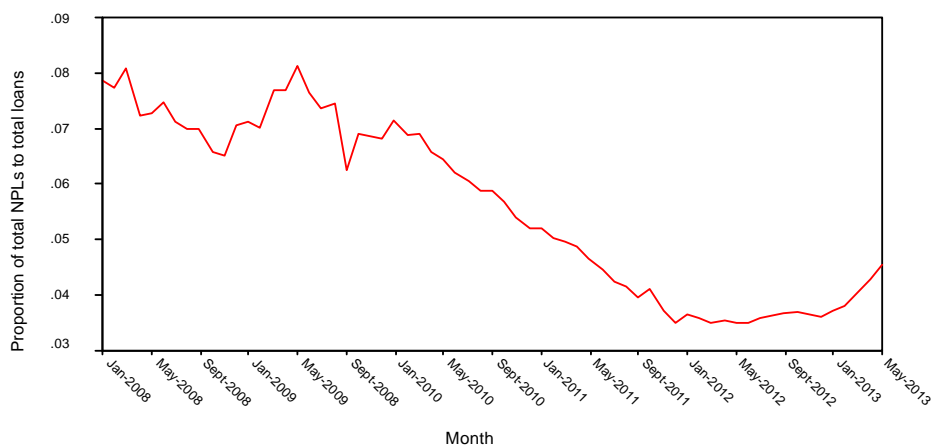
requested. It also implies that a greater proportion of NPLs 71.2% in commercial banks in Kenya will be attributed to other factors other than CIS such interest rate and corruption. As indicated in table 4.7b the F-value =12.974 and the p-value=0.001. These results imply that they are significant therefore; CIS can be used reliably to predict proportions of NPLs to total loans.

Finally table 4.7c shows the coefficients of the regression model used for the study. The results show that the proportion of NPLs will be 6.454E-02 when CIS is Zero and the coefficient of the dependent variable CIS suggests that for every unit increase in the number of credit reports requested there is -2.66E-06 unit decrease in the predicted proportion NPLS. The coefficient of the variable CIS is statistically significant because the p-value 0.001 and the constant is statistically significant because the p-value 0.000

4.4 Trend Analysis of Proportion of Non Performing Loans

NPLs/Total loan (Jan 2008 to May 2013)

Figure 4.4a

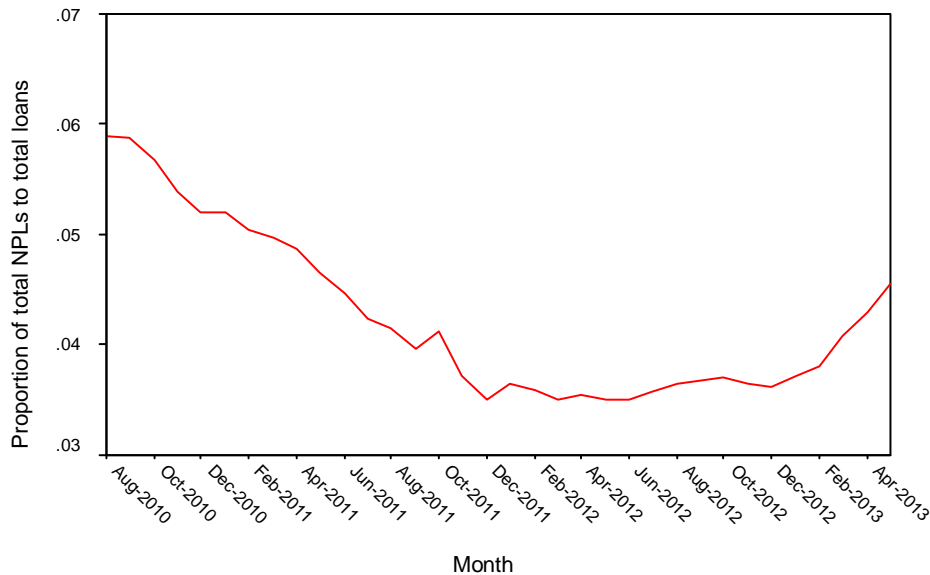


Source: Research Data

In the months starting Jan-2008 to May-2013, the trend results show that the proportion of NPLs/total loans has been generally on declining trend. There is seasonality from Jan-2008 to Jan-2010. This implies that there are months when proportions of NPLs were high before the introduction of CIS.

NPLs/Total loan (Aug-2008 to May-2013)

Figure 4.4b



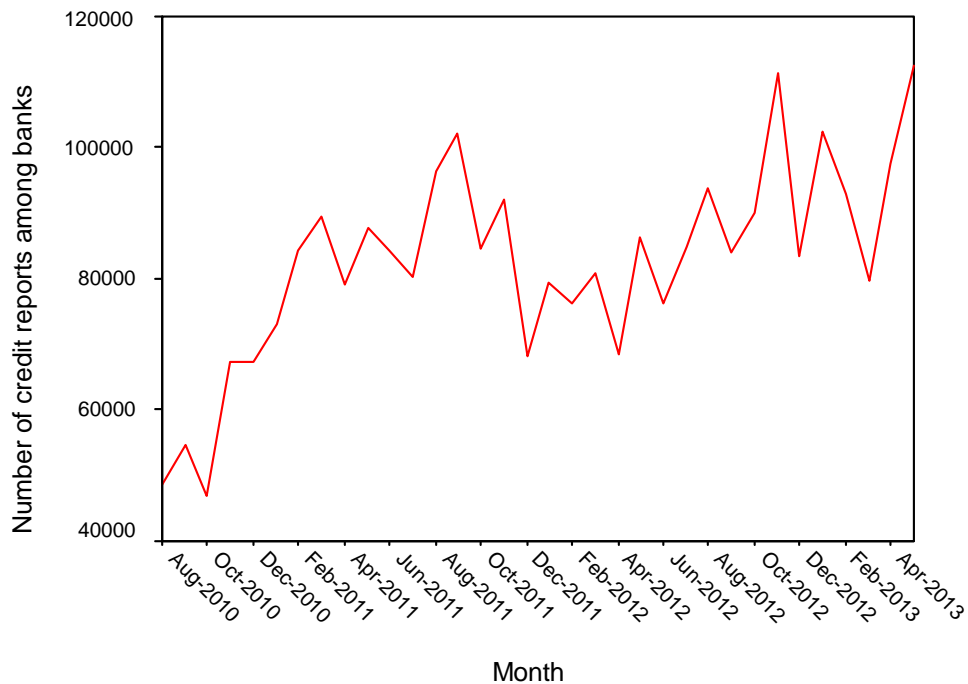
Source: Research Data

In the months starting Aug-2010 to May-2013, the trend results show that the proportion of NPLs/total loans has been generally on declining trend this period represents the time when the credit information sharing started in Kenya. There is no seasonality observed during this period.

4.5 Trend Analysis of Credit Information Sharing

Credit Reports (Aug-2010 to May-2013)

Figure 4.5



Source: Research Data

In the months starting Aug-2010 to May-2013, the trend results show that the number of credit reports requested by banks has been generally increasing. Although there has been a sharp decrease followed by sharp increase these show that the demand for credit reports varies from time to time.

4.6 Correlations of Credit Information Sharing on NPLs

Correlations for data (Aug-10 to May-13)

Table 4.4-presents results of correlations of NPLs and Credit reports

Table 4.6

Correlations			
		Number of credit reports among banks	Proportion of total NPLs & advances to total loans & advances
Number of credit reports among banks	Pearson Correlation	1.000	-.537**
	Sig. (2-tailed)	.	.001
	N	34	34
Proportion of total NPLs & advances to total loans & advances	Pearson Correlation	-.537**	1.000
	Sig. (2-tailed)	.001	.
	N	34	34

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

Source: Research Data

The analysis of the correlations indicates that number of credit reports is negatively correlated with the proportion on NPLs for the period Aug-10 to May-13 ($r = -0.537$) Table 4.4. For the period Jan-08 to May-13 ($r = -0.926$) appendix 2. The negative correlation means that as credit reports increases, the proportion of NPLs decreases. Thus the number of credit reports requested from CRBs helped in average to reduce the NPLs.

4.7 Regression Analysis of CIS on NPLs

Regression Results for Period (Aug-10 to May-13)

Table 4.7a

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.537 ^a	.288	.266	6.49265E-03

a. Predictors: (Constant), Number of credit reports among banks

Source: Research Data

R-Square is the proportion of variance in dependent variable (proportion of NPLs) which can be predicted from the independent variable credit reports (CIS). This value indicates

that 28.8% of the variance in proportion of NPLs can be predicted from the variable number of credit reports requested. R-square represents the overall measure of strength of association.

Table 4.7b

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.469E-04	1	5.469E-04	12.974	.001 ^a
	Residual	1.349E-03	32	4.215E-05		
	Total	1.896E-03	33			

a. Predictors: (Constant), Number of credit reports among banks

b. Dependent Variable: Proportion of total NPLs & advances to total loans & advances

Source: Research Data

The F-value is given as $F = 12.974$ and the p-value associated with this F value is very small (0.001). These values are used to determine if the independent variable reliably predicts the dependent variable. The p-value is compared to alpha level (typically 0.05) from the results above in table 4.5b p-value is 0.001 and it is smaller than 0.05 therefore the conclusion is credit information sharing can be used reliably to predict proportion of NPLs to total loans.

Table 4.7c

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.451E-02	.006		10.396	.000
	Number of credit reports among banks	-2.66E-07	.000	-.537	-3.602	.001

a. Dependent Variable: Proportion of total NPLs & advances to total loans & advances

Source: Research Data

The coefficient constant represents the Y-intercept the height of the regression line when it crosses the Y axis. This is the predicted value of proportion of NPLs when (CIS) credit reports are not shared. Value of proportion of NPLs will be 6.454E-02 when CIS is Zero.

The coefficient of the dependent variable CIS suggests that for every unit increase in the number of credit reports requested there is -2.66E-06 unit decrease in the predicted proportion NPLS. The variable CIS is statistically significant because the p-value 0.001 is smaller than 0.05. The overall regression equation is given by

$$\text{Proportion of NPLs predicted} = 6.451\text{E-}02 - 2.66\text{E-}07\text{CIS}$$

4.8 Tests of Significance

Test statistic F was used where the null hypothesis is that there is not a general relationship between the response (dependent) variable and the predictor (independent) variables, and the alternative hypothesis is that there is one. A *big F, with a small p-value* (< 0.05), means that the null hypothesis is discredited, and we would assert that there is a *general relationship between the response and predictors* (while a small F, with a big p-value indicates that there is no relationship). In this regression analysis Test statistic $F=12.974$ and the $p\text{-value}=0.001$.

CHAPTER FIVE:

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The study applied regression analysis to investigate the effect of credit information sharing on NPLS among Kenyan commercial banks. The following chapter presents the summary, the conclusions, the recommendations, limitations encountered during the study and the suggested areas of further research.

5.2 Summary of Findings and Conclusion

The study found out that the proportion of NPLs/total loans has been generally on declining trend and CIS trend results show that the number of credit reports requested by banks has been generally increasing. The study also found out that there is a negative correlation of CIS on NPLs at ($r = -0.537$). The R-squared value was low at 28.8% representing the overall measure of strength of association. The test statistic F-value was found to be $F = 12.974$ and the p-value associated with this F value is (0.001). Thus the study found out the overall predicted regression equation to be

.

5.3 Conclusion

The sign of the correlation coefficient (+, -) defines the direction of the relationship. Therefore, a negative correlation means that as credit reports increases, the proportion of NPLs decreases. The absolute value of the correlation coefficient measures the strength

of the relationship thus $r=0.537$ indicates a stronger degree of linear relationship between proportion of NPLs and CIS. This value R-squared indicates that 28.8% of the variance in proportion of NPLs can be predicted from the variable number of credit reports requested. This implies that a greater proportion of NPLs 71.2% in commercial banks in Kenya will be attributed to other factors other than CIS such interest rate and corruption.

The p-value is compared to alpha level (typically 0.05) from the results the p-value is 0.001 and it is smaller than 0.05 therefore the conclusion is credit information sharing can be used reliably to predict proportion of NPLs to total loans. The dependent variable CIS is statistically significant because the p-value 0.001 is smaller than 0.05. Note that coefficients having p-values less than alpha (0.05) are statistically significant.

From the predicted regression equation 0.06451 is the predicted value of proportion of NPLs when (CIS) credit reports are not shared and the value $-2.66E-06$ suggests that for every unit increase in the number of credit reports requested there is $-2.66E-06$ unit decrease in the predicted proportion NPLS.

5.4 Limitations of the Study

The data used in this study was obtained from published statements and caution must be taken with limitations of such data. For example, the NPLs data may to some extent be manipulated by management of the banks to represent there wishes generally known as window dressing.

The study was also carried within a fixed time period; this is because CRBs development in Kenya is at its earlier stages considering the first bureau was registered in Feb-2010 under the banking (credit reference Bureau) regulations 2008.CBK banking supervision section. A longer study period might yield different results.

The other challenge was lack of cooperation from credit reference bureaus citing information confidentially regarding the number of credit reports requested per each bank.

5.5 Recommendations

In view of the above findings this study recommends policy makes in Kenya should create rules and regulations to encourage opening up sharing of credit information to all credit providers like SACCOs and MFIs. They should also provide additional incentives to investors encouraging them to open more private CRBs. The government should explore ways of coming up with a public CRB too.

Banks need to increase usage of credit reports from CRBs in order to minimize default as a result of NPLs or customers taking multiple credits from various providers relying on the information. On the other hand the banks should actively collaborate and submit required data to CRBs since this as shown from the findings that it is an effective mechanism of lowering and taming loan defaults.

Studies have proven that similar variables tested in different time periods or even countries do not yield same results, therefore constant review of findings is paramount.

5.6 Areas for Further Research

This study focused on credit information sharing as a variable that only had an effect on proportion of the non-performing loans to total loans in Kenyan commercial banks. There is need for a robust multivariate model considering other factors affecting NPLs. For example to investigate the effects of interest rates and credit information sharing on NPLs among Kenyan commercial banks.

It has been argued that successful credit information sharing is dependent on volumes of data stored and enquiry of volumes made. Another area of interest therefore will be to investigate whether the increase in data volumes and nature of data stored in CRBs increases its predictive value. a scenario where a credit report adversely affects a customer but a bank goes a head and gives a credit facility; what will the happen, will the customer default?

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APPENDICES

APPENDIX 1

LIST OF COMMERCIAL BANKS AND MORTGAGE FINANCE COMPANIES IN KENYA

A: Commercial Banks

1. **African Banking Corporation Ltd.** Date Licensed: 5/1/1984.
2. **Bank of Africa Kenya Ltd.** Date Licensed: 1980.
3. **Bank of Baroda (K) Ltd.** Date Licensed: 7/1/1953
4. **Bank of India Date Licensed:** Date Licensed: 6/5/1953.
5. **Barclays Bank of Kenya Ltd.** Date Licensed: 6/5/1953.
6. **CFC Stanbic Bank Ltd.** Date Licensed: 5/14/1955.
7. **Charterhouse Bank Ltd** Date Licensed: 11/11/1996. UNDER
8. **Chase Bank (K) Ltd.** Date Licensed: 4/1/1991.
9. **Citibank N.A Kenya.** Date Licensed: 7/1/1974.
10. **Commercial Bank of Africa Ltd.** Date Licensed: 1/1/1967.
11. **Consolidated Bank of Kenya Ltd.** Date Licensed: 12/18/1989.
12. **Co-operative Bank of Kenya Ltd.** Date Licensed: 1/1/1965. Peer Group:
13. **Credit Bank Ltd.** Date Licensed: 5/14/1986.

14. **Development Bank of Kenya Ltd.** Date Licensed: 1/1/1973.
15. **Diamond Trust Bank Kenya Ltd.** Date Licensed: 1/1/194.
16. **Dubai Bank Kenya Ltd.** Date Licensed: 1/1/1982.
17. **Ecobank Kenya Ltd.** Date Licensed: 01/11/2005.
18. **Equatorial Commercial Bank Ltd.** Date Licensed: 12/20/1995.
19. **Equity Bank Ltd.** Date Licensed: 28/12/2004.
20. **Family Bank Limited.** Date Licensed: 1984.
21. **Fidelity Commercial Bank Ltd.** Date Licensed: 6/1/1992.
22. **Fina Bank Ltd.** Date Licensed: 1/1/1986.
23. **First community Bank Limited.** Date Licensed: 29.04.2008.
24. **Giro Commercial Bank Ltd.** Date Licensed: 12/17/1992.
25. **Guardian Bank Ltd.** Date Licensed: 12/17/1992.
26. **Gulf African Bank Limited.** Date Licensed: 1/11/2007.
27. **Habib Bank A.G Zurich.** Date Licensed: 1/7/1978.
28. **Habib Bank Ltd.** Date Licensed: 2/3/1956.
29. **Imperial Bank Ltd.** Date Licensed: 1/11/1992.
30. **I & M Bank Ltd.** Date Licensed: 1/1/1974.

- | | | |
|-----|---|----------------------------|
| 31. | Jamii Bora Bank Limited. | Date Licensed: 9/10/1984. |
| 32. | Kenya Commercial Bank Ltd. | Date Licensed: 1/1/1896. |
| 33. | K-Rep Bank Ltd. | Date Licensed: 3/25/1999. |
| 34. | Middle East Bank (K) Ltd. | Date Licensed: 10/1/1980. |
| 35. | National Bank of Kenya Ltd. | Date Licensed: 1/1/1968. |
| 36. | NIC Bank Ltd. | Date Licensed: 9/17/1959. |
| 37. | Oriental Commercial Bank Ltd. | Date Licensed: 8/2/1991. |
| 38. | Paramount Universal Bank Ltd. | Date Licensed: 10/1/1993. |
| 39. | Prime Bank Ltd. | Date Licensed: 3/1/1992. |
| 40. | Standard Chartered Bank Kenya Ltd. | Date Licensed: 10/1/1910. |
| 41. | Trans-National Bank Ltd. | Date Licensed: 8/1/1985. |
| 42. | UBA Kenya Bank Limited. | Date Licensed: 24/09/2009. |
| 43. | Victoria Commercial Bank Ltd. | Date Licensed: 6/1/1987. |

B: Mortgage Finance Companies

- | | | |
|---|-----------------------------|--------------------------|
| 1 | Housing Finance Ltd. | Date Licensed: 5/7/1965. |
|---|-----------------------------|--------------------------|

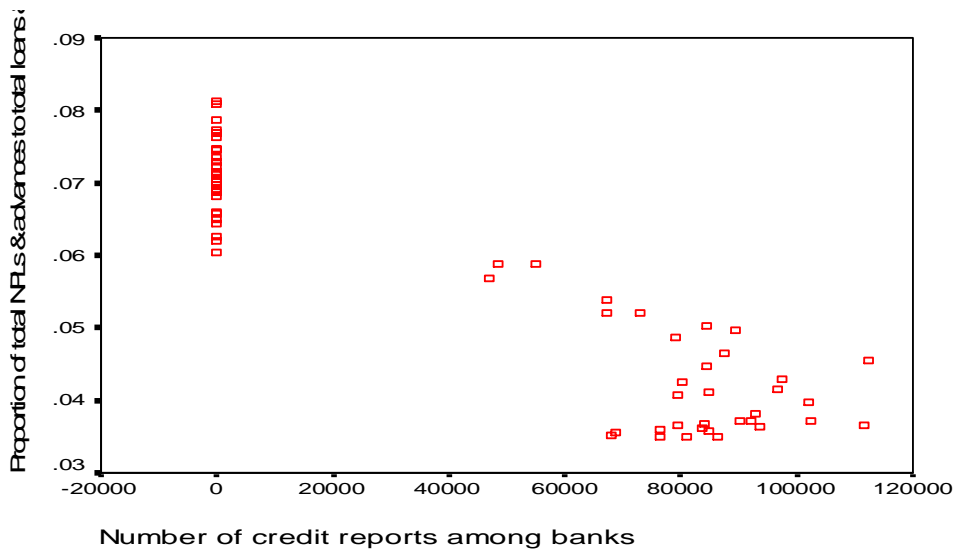
Source. CBK <http://www.centralbank.go.ke/index.php/bank-supervision/commercial-banks-mortgage-finance-institutions>

APPENDIX 2

TREND, CORELATIONS AND REGRESSION ANALYSIS RESULTS

Scatter Plot of Both CIS and NPLs\Total Loans (Jan-08 to May-13)

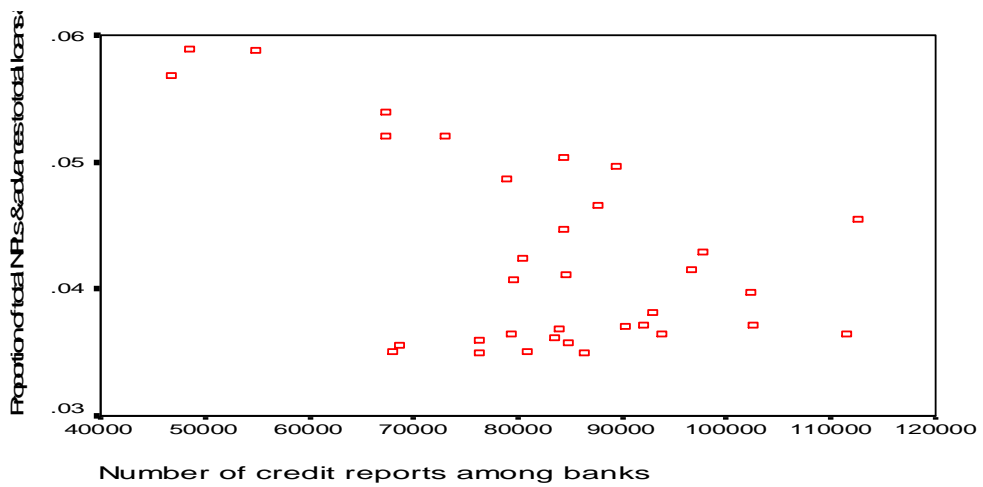
Figure 2.0



Source: Research Data

Scatter Plot of Both CIS and NPLs\Total Loans (Aug-10 to May-13)

Figure 2.1



Source: Research Data

Correlations for data (Jan-08 to May-13)

Table 2.0

Correlations			
		Number of credit reports among banks	Proportion of total NPLs & advances to total loans & advances
Number of credit reports among banks	Pearson Correlation	1.000	-.926**
	Sig. (2-tailed)	.	.000
	N	65	65
Proportion of total NPLs & advances to total loans & advances	Pearson Correlation	-.926**	1.000
	Sig. (2-tailed)	.000	.
	N	65	65

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

Source: Research Data

Regression Results for Period (Jan 08-may 13)

Table 2.1

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.926 ^a	.858	.856	5.98223E-03

a. Predictors: (Constant), Number of credit reports among banks

Table 2.2

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.363E-02	1	1.363E-02	380.989	.000 ^a
	Residual	2.255E-03	63	3.579E-05		
	Total	1.589E-02	64			

a. Predictors: (Constant), Number of credit reports among banks

b. Dependent Variable: Proportion of total NPLs & advances to total loans & advances

Table 2.3**Coefficients^a**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.076E-02	.001		67.011	.000
	Number of credit reports among banks	-3.40E-07	.000	-.926	-19.519	.000

a. Dependent Variable: Proportion of total NPLs & advances to total loans & advances

APPENDIX 3

DATA ON CREDIT REPORTS AND NON PERFORMING LOANS

Month of Data Submission	Credit Reports Requests from CRB AFRICA	Credit Reports Requests from Metropol CRB	Total Credit Reports Requests - Among Banks in Kenya	Total Loans and Advances Among Banks in Kenya (KSH Billion)	Total NPLs Among Banks in Kenya (KSH Billion)	Proportion of Total NPLs to Total Loans and Advances Among Banks in Kenya
Jan-2008	0	0	0	536.70	42.20	0.08
Feb-2008	0	0	0	541.60	41.90	0.08
Mar-2008	0	0	0	539.40	43.60	0.08
Apr-2008	0	0	0	601.20	43.50	0.07
May-2008	0	0	0	595.80	43.40	0.07
Jun-2008	0	0	0	582.90	43.50	0.07
Jul-2008	0	0	0	612.10	43.60	0.07
Aug-2008	0	0	0	623.00	43.50	0.07
Sep-2008	0	0	0	623.00	43.50	0.07
Oct-2008	0	0	0	665.40	43.80	0.07
Nov-2008	0	0	0	665.80	43.30	0.07
Dec-2008	0	0	0	671.80	47.40	0.07
Jan-2009	0	0	0	677.40	48.20	0.07
Feb-2009	0	0	0	682.30	47.90	0.07

Mar-2009	0	0	0	681.90	52.40	0.08
Apr-2009	0	0	0	686.00	52.80	0.08
May-2009	0	0	0	694.00	56.40	0.08
Jun-2009	0	0	0	699.10	53.40	0.08
Jul-2009	0	0	0	708.30	52.10	0.07
Aug-2009	0	0	0	718.00	53.50	0.07
Sep-2009	0	0	0	720.50	45.10	0.06
Oct-2009	0	0	0	744.90	51.40	0.07
Nov-2009	0	0	0	747.30	51.30	0.07
Dec-2009	0	0	0	762.40	52.00	0.07
Jan-2010	0	0	0	765.90	54.80	0.07
Feb-2010	0	0	0	773.90	53.20	0.07
Mar-2010	0	0	0	780.30	53.90	0.07
Apr-2010	0	0	0	789.40	52.00	0.07
May-2010	0	0	0	805.90	51.90	0.06
Jun-2010	0	0	0	818.80	50.80	0.06
Jul-2010	0	0	0	838.80	50.70	0.06
Aug-2010	48,538	0	48,538	854.00	50.30	0.06
Sep-2010	54,794	0	54,794	868.70	51.10	0.06
Oct-2010	46,780	0	46,780	889.20	50.50	0.06
Nov-2010	67,309	0	67,309	901.10	48.60	0.05
Dec-2010	67,301	0	67,301	933.80	48.60	0.05

Jan-2011	72,950	0	72,950	933.80	48.60	0.05
Feb-2011	84,456	0	84,456	959.10	48.30	0.05
Mar-2011	89,463	0	89,463	983.90	48.90	0.05
Apr-2011	79,009	0	79,009	1,004.60	48.90	0.05
May-2011	87,634	0	87,634	1,035.40	48.20	0.05
Jun-2011	84,319	0	84,319	1,072.70	47.90	0.04
Jul-2011	80,359	1	80,360	1,107.70	47.00	0.04
Aug-2011	96,015	523	96,538	1,127.10	46.80	0.04
Sep-2011	101,938	262	102,200	1,181.70	46.90	0.04
Oct-2011	84,514	162	84,676	1,202.30	49.50	0.04
Nov-2011	91,915	121	92,036	1,190.20	44.20	0.04
Dec-2011	68,026	50	68,076	1,194.20	41.90	0.04
Jan-2012	79,332	113	79,445	1,195.90	43.60	0.04
Feb-2012	76,100	168	76,268	1,210.00	43.50	0.04
Mar-2012	80,438	408	80,846	1,224.90	42.90	0.04
Apr-2012	67,966	609	68,575	1,249.60	44.40	0.04
May-2012	85,370	939	86,309	1,279.70	44.80	0.04
Jun-2012	75,198	1,105	76,303	1,279.70	44.80	0.04
Jul-2012	82,717	2,058	84,775	1,299.20	46.50	0.04
Aug-2012	91,549	2,200	93,749	1,312.50	47.80	0.04
Sep-2012	81,536	2,389	83,925	1,304.10	48.00	0.04
Oct-2012	88,308	1,876	90,184	1,327.40	49.20	0.04

Nov-2012	105,707	5,749	111,456	1,337.80	48.80	0.04
Dec-2012	76,993	6,499	83,492	1,348.50	48.80	0.04
Jan-2013	95,837	6,587	102,424	1,371.80	51.00	0.04
Feb-2013	83,504	9,323	92,827	1,382.30	52.70	0.04
Mar-2013	70,795	8,788	79,583	1,388.60	56.60	0.04
Apr-2013	81,624	15,994	97,618	1,406.10	60.40	0.04
May-2013	86,427	26,060	112,487	1,427.60	65.00	0.05

Source: Central Bank of Kenya. Monthly Economic Review Reports