

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

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FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD
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DECLARATION

This is my own original work that has never been presented in any other University for an award of any academic satisfaction.

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

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DEDICATION

This project is dedicated to my family for their enduring love, support and encouragement when I was out to pursue my studies.

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ABBREVIATION AND ACRONYMS

CBK	Central Bank of Kenya
CIS	Credit Information Sharing
CRB	Credit Reference Bureau
IFC	International Finance Corporation
IMF	International Monetary Fund
MFI	Microfinance Institution
NPLs	Non-Performing Loans

ABSTRACT

Credit information sharing (CIS) is a mechanism that allows credit institutions that includes Commercial banks, Microfinance banks; credit only microfinance (MFIs), SACCOs and other credit providers of goods and services to share credit data on their customer's payment performance. This study sought to determine the effect of CIS on NPLs of Kenyan commercial banks. Secondary data required for this study was collected from CBK loan book, CBK annual bank supervisory reports, and was used in the analysis. The data required was compared in two faces: 2006 to 2010 and 2011 to 2015. Data collected for both depended, independent and moderating variables included; Total gross loans, Loan loss provisions, Non-performing loans, No of credit file/reports shared. The study findings establish a significant difference between NPLs before and after credit information sharing. The study findings showed that CIS accounted for 73.9% changes in nonperforming loans in commercial banks loan book in Kenya. The study recommended that, the government needs to strengthen credit-information regulations and include other credit providers like SACCOs, MFIs, DFIs, utility firms like water and electricity suppliers and providers of goods and services to join the mechanism. The study also concludes that there is need to put in place specific initiatives to create awareness to consumers and increase financial literacy on the benefits of CIS. The study also recommended an analysis of credit information sharing on financial inclusion. This follows from the fact that the World Bank Ease of Doing Business Report for 2015 indicated that Kenya has moved from globally position 128 to position 28 on financial inclusion over the period 2010 to 2014 and position 28 to 3 on the African Continent over the same period. Although this points to the effect of CIS, a clear study is recommended here in order to establish the specific drivers that have impacted on this situation.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Credit Information sharing enables lenders to address the issue of credit rationing. In extending a loan, lenders are faced with the information asymmetry, adverse selection and moral hazard problem which the borrower only knows his/her capability to pay as well as his/her intention on why he/she wants the loan. As such, the lender has a great duty to infer the kind of risk profile of a borrower. The assessment is very important since the loan is an agreement where the borrower is supposed to repay within an agreed period of time without failure (Beck, 2011). It involves the lender in giving value now for a promise by the borrower to repay at a future date.

Credit Reference Bureaus are giant storage facilities that provide a centralized database of everyone's credit history and activities. It provides a platform on which lenders share credit information on the credit performance of their customers. The information that is on the database is sourced from regulated lenders like Commercial Banks, Microfinance Banks and other non-regulated credit providers (Turner, 2010).

Faced with adverse credit risk challenges and numerous non-performing loans (NPLs), banks are currently adopting Credit Information Sharing (CIS) as a tool to enable them to minimize risk and have confidence when offering credit because they can estimate the likely loss that they will incur if the borrower defaults on their loan obligations (Beck, 2004). CIS helps to give the lender the evidence and therefore the confidence that the borrower has the means and ability to repay by looking at previous repayment performance.

1.1.1 Credit Information Sharing

Credit information sharing occurs when lenders exchange information on the credit performance of their customers through a platform of Credit Reference Bureaus. Data or sharing of information is the principle of lenders agreeing to share mandated or multiple aspects of their client repayment and identification information together for the benefit of reducing risk and lending more efficiently (Beck, 2011). Every time a lender extends credit to a borrower, they are faced with the possibility of losing their capital and expected profits if the borrower defaults; or profit reduction if the borrower does not pay back on time due to the time value of money; or profit reduction due to the cost of giving the credit. Therefore minimization of defaults, ensuring collection on time and efficiency in the credit process will make the difference between a successful or failed lender.

According to Pagano and Jappelli (2002) credit information sharing is a mechanism which allows credit information providers to share the borrowing details of their debtors with the licensed CRBs which correlate that data, analyze and generate report from which the credit market feeds. Information sharing is both from the credit providers to the bureau and bureau to the credit providers inform of credit reports. Sinare (2008) asserts that CRB are those institution which collect and share data on repayment habits and the current debt of their debtors. This is compiled into a report which is made available to the credit providers.

Information asymmetry between participants in the credit market has been a challenge which fuels the cost of credit and led to deterrence of other players from accessing credit (CBK 2010). This state leads to adverse selection and exposure of credit providers to moral hazards which in the long run results in rationing of credit

(Stieglitz & Weiss, 1981). CSI drastically reduces adverse selection cases by availing credit profile of the borrowers enhancing the banks' allocation of credit efficiently through improved credit risk assessment (Houston, Lin & Ma, 2010). The mechanism also enables monitoring of the credit risk by availing those events that shows deterioration of the debt serviceability capacity of the debtors. These events include bounced cheques, notices of default, new credit applications, fraud activities and inquiries.

Sharing of full file information allows debtors to create “reputational collateral” normally in form of credit score and the payment performance index (PPI) these indicates the level of risk a borrower pose to the lenders (Kiage, Musyoka & Muturi, 2015). These features are compiled in one report by the CRBs which it shares with credit providers in the market. CIS is measured by the number of reports pulled by these providers

CIS was introduced in Kenya through the amendment of the Banking Act in 2007. This led to the enactment of the Credit Reference Bureau Regulations, 2008 that provided for the licensing and operations of CRBs in Kenya. These Regulations mandated Banks to share non performing credit data on their customers. The First CRB was licensed in 2010 and the second CRB in 2011. A second amendment was done in 2012 and these resulted into The CRB Regulations 2013, which mandated Banks and Microfinance Banks to share both negative and positive information. The same regulations allowed non-bank credit providers (The unregulated credit providers) to also join the CIS mechanism. Currently ALL the 42 Commercial Banks and 12 Microfinance Banks share information with the three licensed CRBs in Kenya.

Given that CIS has been in operation for the last six years, it's now possible to measure the impact of CIS on non-performance loans of banks.

1.1.2 Nonperforming Loans and Credit Market Performance

Non-performing loans (NPLs) have really gained a great attention of late. If NPLs are not well managed, they have the potential of not only reducing the banks' profits but can also lead to fail of a bank. As such, banks' managers are really paying a great attention to banks' NPLs. Non-performing loans affect the profits of institutions because of the huge amounts of provisions for loan loss that ultimately reduces distributable profits. In view of the fact lending remains a core activity of commercial Banks, efforts to reduce NPLs will remain a key concern of regulators and key stakeholders (Krishnan, 2009).

Mombo (2013) found out that NPLs in Kenyan deposit taking microfinance institutions accounted for a great percentage of variance in profitability of these institutions. Studies have also shown that nonperforming loans can lead to a crisis in the banking and result in collapse of such institutions. The incidence of non-performing loans affects the risk appetite of lenders and consequently the credit availability to borrowers. High non-performing loans will impact directly on the cost of credit as lenders load high interest to compensate them for the high risk premium. Credit information sharing therefore communicates the status of loan performance from existing lending relationships to outside lenders.

1.1.3 Impact of Credit Information Sharing on Non -Performing Loan

Credit Information Sharing has the impact of minimizing the default risk and therefore motivating Banks to create more credit for firms and consumers. Whereas economic growth is a product of many factors ranging from economic to financial to social and even cultural, the financial health of the economy is determined by the lending efficiency within the economy. Relation between Credit Registries characteristics (age, type of data) and Credit /GNP play a role in determining soundness of lending process (Jappelli, 2006). Lenders provide capital to firms for production in form of debt and to consumers for consumption of goods and services that have been produced.

High incidence of non-performing debt would therefore discourage lenders from making credit available or increase the price at which credit is made available therefore increasing the cost of capital. When information is readily available, default rate usually reduces thereby improving access to credit (Barren, 2000). This means reduced risk and maximized return. In all, this financial efficiency manifests in improved economic activity as measured by the financial performance of commercial banks of a country (Kuznets, 1955).

1.1.4 Commercial Banks in Kenya

According, CBK's directory there is forty-three commercial banks in the country some of which are internationally based. The headquarters of these banks are in Nairobi and they serve both retail and corporate customers. The banks in the country perform the following function: creation of money, community savings, ensure smooth support of payment mechanisms, ensure smooth flow of international transactions, storage of valuable goods and provision of credit services. The Central

Banks of Kenya falls under Treasury docket, is accountable for the formulation and execution of monetary policy and foster of liquidity and proper operations of Kenyan commercial banks. This policy formulation and implementation also include commercial banks financial risk management and financial performance (CBK, 2015).

Initially, banking sector was facing a great challenge of non-performing which show a number of banks fail. This menace leads to the advent of credit information sharing through an Act of parliament which leads to the formation of credit reference bureaus. This concept has made great progress and today the industry is operating under “full file” sharing mechanism.

The credit reference bureaus are licensed by the CBK to provide a platform for sharing credit information. In Kenya, the concept of CIS has made tremendous progress. Initially in 2004, the laws only stated that banks “MAY” share negative information. This lasted for four years before the law was repealed in 2008 to state that banks MUST share negative information. These changes were mandated by the menace of serial defaulters who saddled the banking sector with great non-performing loans. In 2013, the law was repealed further to allow sharing of information whether positive or negative information and also to allow other participants referred to “third party” participants to participate in credit information sharing. This is the advancement that opened window for Sacco’s, MFIs, DFIs, utility companies, and trade companies to participate in the mechanism.

Without a borrower’s credit report, the credit provider would be less likely to grant one credit, or they may charge much higher interest rates as they need to cover a higher risk of more accounts not being repaid. In the past the credit provider spent

hours, maybe days in time telephoning for references on how well their credit applicants were repaying their loans. Credit Information sharing has therefore helped to put an end to this time consuming means of confirming someone's good or bad credit record by storing all of the information on a database enabling lenders to make risk decisions within seconds (Turner, 2008).

There has been a decrease in NPLs, the figures are still high. Additionally, the government tends to be involved in setting interest rates on loans and deposits which means that small banks are competed out as they become less profitable and more inefficient. As at 31st December 2014, there were 44 commercial Banks and 7 representative offices of foreign banks. The structure was as follows: Locally owned banks -30; publicly listed Banks-3; Foreign owned Banks- 14 (Kenya Bankers Association, 2012).

1.2 Research Problem

The topic of credit information sharing has received much attention from researchers due to the central role it plays in the financial sector. The mechanism is premised in the fact that an individual's past credit profile is the best predictor of the future (Miller, 2003).

Credit information sharing is a mechanism that allows credit institutions that is banks and “third party” credit information providers as defined under the credit reference bureau regulation 2013, to share the performance of their debtors. Despite ambiguity of the theory of effects of CIS on the performance of credit market, substantial empirical evidence have been drawn by various researchers on positivity of this relationship. Jappelli and Pagano (2007) established that the institutions that share

information are directly related to the performance of the credit market as the cost of credit declines with sharing of information between lenders.

Credit information sharing therefore takes a center stage as a principal intermediary between savers and borrowers to address the essential link which overcomes information asymmetry; adverse selection and moral hazards in credit market, hence stimulating access to credit, lowering interest rates and reducing defaults.

Credit information sharing particularly within financial institutions is very relevant for performance of credit market in nations with weak laws and creditor rights especially transition economies like Kenya, which in recent years has been saddled with huge non-performing loans portfolio thus affecting credit market development (Kenya Bankers Association, 2012). In his address during the launch of the Credit information sharing implementation project the governor of Central Bank of Kenya agrees that there is a direct and clear connection between access to credit and development of an economy which emphasizes the role of credit markets in Kenya in the achievement of vision 2030 through financial inclusion, and provision of affordable credit in all sectors of the economy (CBK, 2014).

Studies by Amayo (2011) and KCISI (2011) on the challenges of adoption of information sharing in the Kenyan banking sector established that whereas Kenyan commercial banks are increasingly offering new services such as mobile banking, agency banking, bank-assurance, faceless banking and integrating microfinance in their banking models, there is need to conduct research focusing on sharing of information and credit market performance.

Studies, analyzing the impact of credit information sharing on non -performing loan patterns are however still unconvincing as to superiority of a single sharing of information mechanism. Thus, there is not just a single solution: configuration of CIS should be established as a function of legal, institutional and economic framework. This study thus seeks to bridge the mentioned above study gap by providing answers to the question; what are effects of CIS on NPLs in Kenyan commercial banks?

1.3 Research Objective

To examine effects of CIS on the NPLs in Kenyan commercial banks.

1.4 Value of the Study

The study results will contribute to the existing body of knowledge on CIS on NPLs including the effect of the study variables. The research output will be a source of invaluable literature among the study variables on theories and policies that inform them. Theories such as the Credit Rationing Theory, Adverse Selection theory of credit markets and Interest Rate Theory are likely to benefit from the findings of this study. This study will make contributions to managerial practice on lending by commercial banks, hence aligning banks to these aspects and managerial practices to avert risk. Essentially all credit risk managerial practices should get to above average and lead to establishment of a proper link between bank credit information sharing and non-performing loans to ensure better performance.

The Central Bank will find the study useful as the regulatory agency might need to come up with regulations relating to strengthening credit information sharing and when a country should consider credit information sharing as an option. The study shall have policy implications in terms of explaining related factors. The findings of the study will also likely add to the existing policy tools that may guide on CIS and NPLs by commercial banks.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looks at a review of previous studies done by other researchers on CIS and banks' performance in financial perspective. It also discusses the theoretical and the empirical literature related to the effect of CIS on NPLs. It also reviews theories related to the study.

2.2 Theoretical Review

The following are some of the theories that explain efficiency and effectiveness of the credit market. The theories covered include: loanable funds theory, moral hazard theory, and information asymmetry theory.

2.2.1 Loanable Funds Theory

The loanable funds theory was established by Wicksell Robertson in the year 1934. This theory states that the quantity of a financial security supplied usually change at every given interest rate in reaction to a change in another factor besides interest rate (Akenga, Olang & Galo, 2015). This theory also states that the rate of interest is determined by demand and supply of money in an economy at a level where demand equals supply (Sen, 2015).

The loanable funds model determines interest rates based on the supply and demand in the bonds market. In the loanable funds approach, the equilibrium interest rate equates the quantity supplied of loanable funds, which consists of saving with the quantity demanded for loanable funds, that's comprises of investment and government financed bond deficit (Khandker & Khandker, 2008).

2.2.2 Moral Hazard Theory

Moral hazard problem means that unless there are consequences of default on future credit applications, borrowers have the incentive of default. Failure to access the historical credit profiles of borrowers encourages moral hazard and this may lead to lenders loading punitive interest rates that can eventually lead to breakdown of credit market (Alary & Goller, 2001).

According to Klein (1992) credit information sharing motivates borrowers to honor their contractual obligations. Borrowers will likely honor their loans obligations since they know if they default, they will be “black” listed which essentially means they will be excluded from formal borrowing in future. Both cases demonstrate that default attract heavy penalty in terms of interest rates or exclusion from future borrowing hence information sharing is a mechanism that helps to overcome the moral hazard challenges postured by borrowers (Padilla & Pagano, 2000).

2.2.3 Information Asymmetry Theory

Asymmetric information arises when one party is in possession of information that the counter party is not privy to. The theory of asymmetric information postulates that, if a participant who is advantaged capitalizes on the information, it can lead to market imperfection. This theory was championed by Akerlof (1970) in his paper named “Lemons”: Quality uncertainty and the market mechanisms. He argues that buyers use statistical analysis of the market in measuring the value in various classes of goods.

Through his in-depth analysis of the automobile industry, Akerlof found that while the sellers have intimate, specific knowledge of the items, the buyers generally relies on the average information of the whole market in assessment of product so as to make a buying decision. Akerlof further claims that this gives sellers an opportunity

to sell goods that are below the average market quality hence making buyers to adversely select.

Several other researchers like Spencer (1973); Stiglitz (1976) have contributed to this theory. Pagano and Jappelli (1993) investigated the role CIS plays in limiting adverse selection in the credit market. Their study postulates that information asymmetry between lenders and borrowers breeds credit rationing. Each institution has information about their clients but has no any information about new applicants. If the credit providers share information about their client's financial performance, only credit worthy customers will be admitted hence they will be able to drastically reduce defaults.

2.3 Determinants of Non-performing Loans in Banks

Existing literature on the life-cycle consumption model presents the key economic determinants of NPLs.

2.3.1 Credit Information Sharing

CIS is a mechanism by which Lenders share credit performance data on borrowers. Through CIS, Lenders are able to see the previous credit history of a borrower in respect to how they have borrowed and repaid their loans in the past. Previous credit history constitutes things like: total amount of outstanding credit; period of repayment for each facility and the amount and number of installments; the types of credit facilities granted etc. In the absence of CIS in a banking environment, borrowers tend to leave a trail of non-performing loans with various Lenders through over exposures and a poor credit mix. This practice of serial defaults has contributed to a high level of NPLs in most of the collapsed banks being managed by the Deposit Protection Fund

(CBK). CIS reduces the incidences of information asymmetry and moral hazard when a Lender is assessing the creditworthiness of a borrower.

2.3.2 Borrower Characteristics

Bank loans can become non-performing when the borrower's financial health is compromised (IFC, 2011). According to the International Finance Corporation (IFC, 2011), financial health of a borrower is determined by two things; the borrower's ability to pay, and borrower's willingness to pay. Both cases, however, cannot always be distinguished. Schagen (1996) was concerned about the poor financial literacy level of financial products consumer can lead to a poor decision making.

2.3.3 Interest Rates

Commercial banks tend to increase the interest rate when dealing with riskier clients (Farhan, 2012). According to Farhan(2012), if a high rate of interest is charged to such borrowers who already have substandard payment record, then this is also an influencing factor of NPLs. The interest rate level is a combination of costs risk premium and of course a bank's profit margin. High interest rates also give rise to default risk. The risk premium and search costs can be minimized by information sharing hence reducing the Non-performing loans.

A similar study carried out by Farhan (2012) sought to investigate the determinants of NPLs in Malaysia. The study confirmed that interest rate has a significant positive relation with NPLs in Malaysia banking sector. Similarity of the results to those obtained by Khemraj (2009) was proof that NPLs are as much a problem in Islamic banking as they are in conventional banking.

2.3.4 Regulatory Guidelines

Regulatory guidelines offer a structure guiding the lending procedures of a financial institution, but according to Ng'etich (2011), the regulations are just on paper but not consistently and effectively enforced. For any bank to survive, it must be profitable. It's therefore important that Banks put in place a robust risk management framework that enables them to identify measure and control risk. Regulation in the financial sector endeavors to reduce imprudent actions of banks with regards to insider lending, charging high rates of interest, and reducing asset defaults.

2.3.5 Country Economic Environment

An economic development of a country is usually directly related to vibrancy of its banking sector (Kwambai *et al.*, 2013). The economic environment of a country can be influenced by the political goings-on at a particular period of time. One such country that has had its political happenings affecting the banking system is Uganda. Uganda's banking system posted huge losses in the early 1990s due to years of economic mismanagement compounded by political interference.

Growth in the GDP of a country usually increases the income of citizens and by extension, enhancing the capacity of borrowers' loan repayment which in turn contributes to lower NPLs and vice versa (Khemraj, 2009).

2.4 Empirical Review

Koros (2015) studied the effect of CIS on the general credit market financial performance narrowing down on commercial banks. A census study of the 43 commercial banks' secondary data was collected between 2008 and 2014. Descriptive research design was employed and a regression analysis done. A positive relationship

was established between CIS measured by the number of credit reports pulled and credit market financial performance.

Ng'ang'a (2015) explored the effects of CIS on NPLs of the banks in Kenya. Secondary data of 44 commercial banks were analyzed between 2010 and 2014. Multiple linear regression was used to establish a negative relation demonstrating the fact that credit information sharing betters management of credit risk exposure.

Muthoni (2014) studied CIS, bank characteristics and the general market financial performance. The main aim of the study was to establish effect of sharing credit information on overall performance of credit market. Data on default and credit availability of commercial banks was gathered for a 5 years period. Descriptive and exploratory research designs were employed to establish effects of CIS on performance in financial perspective of entire population of all banks in Kenya. Panel data regression was done. The researcher established that CIS significantly reduces the default rates and hence enhancing the profitability of banking institutions.

A research on imperative of information and power theories of credit in trial to explain the variations in size of credit market by Djankov et al. (2007) revealed that credit information sharing is directly correlated to the gross domestic product of an economy. Data from 129 countries was analyzed between 1978 and 2003.

Kerage and Jagongo (2014) studied the credit information sharing to interrogate banks' performance in financial perspective. A census survey of all banks operating under banking Act for a 5 years period was studied. Both primary and secondary data was analyzed. Multiple regression analysis was carried out. The researchers established that sharing the debtors' details with the bureau drastically improve

bank's financial performance. Multiple regression was developed to determine the relationship. It is established that 87% variations of banks' profitability is explained by volume of loans, level of non-performing loans, the interest rates charged and the total operating costs.

Munee (2013) carried out a research on effects of CIS on financial faring of Kenyan banks. A regression analysis was done on total non-performing loans, number of reports pulled from the bureaus and return on assets. The findings showed that credit information sharing and banks' performance in financial perspective are positively related.

The credit reference bureau regulation 2013 section 15(1), a ,b & c) defines the roles of the credit reference bureau as to receive customer data, store, manage, evaluate, update, disseminate, compile and generate reports. Jappelli and Pagano (1999) assert that CIS reduces challenges of access to credit through determination of risk of borrower. They further postulates that bureaus enables borrowers to create credit profiles which lending institutions admitted to the CIS mechanism through CBK approval can access hence making lending market more competitive. Jappelli and Pagan (1999) further conclude that sharing of borrowing information positively affects the economy.

Petersen (1994) states that banks faces "adverse selection" or "moral hazard" challenges when operating outside the credit information mechanism. Inefficient allocation of credit which arises from the fact that specific characteristics information about the borrower is hidden from the lender is called adverse selection. On the other hand, moral hazard results from inabilities to see the actions of the borrower which directly alters the probability of repayment. The opportunistic action taken by the

borrower to exploit a lender due to informational gap results to sub-optimal allocation of resources in lending.

Hogen at al. (2001) asserts that reduction of non-performing loans is among the main role of the banks management. This facts is supported by (Deborah, R & April, W 2013; Eagles & Bosworth 1998). The researchers conclude that if the menace of non-performing loans is not controlled, these institutions will incur financial losses which will eat up their capital and interests drastically impairing the ability to sale loans as per the intended purpose of the bank. Assessment of the credit risk is an essential component of macro-prudential surveillance (Beck et al., 2013). The above studies suggest that credit risk is key in stress testing due to its impact on the bottom line of an institution's balance sheet.

Kithinji (2013) examined effects of sharing of information on credit market performance of Kenyan banks. The study used commercial bank data from 2006 to 2011 and used f-test and step-wise regression to estimate the model. The study established that CIS has reduced non-performing loans while also increasing loanable funds in the country. The study was however non-robust in findings as it only used 2 year data of post information sharing.

Ndegwa (2014) did a study on how non-performing loans are affected by the mobile money markets. He studied how interest rate, growth in GDP, CIS, inflation, exchange rate and unemployment in the economy affect level of NPLs. Data was collected from the 43 commercial banks and multiple linear regression used in the analysis. The study established that while non-performing loans are negatively affected by the mobile money markets, it is the credit information sharing that

moderates the relationship. The study however failed to establish the sole effect of CIS and borrowers features on NPLs.

Gettee (2012) studied effect of CIS on the economic growth. The study was conducted on annual volumes credit information entries of CRB from 2008 to 2012. The study established that CIS by organizing the loans market and reducing non-performing loans has significantly contributed to GDP growth. The study however looked at only three years postCIS.

Ng'etich (2011) looked at the determinants of NPLs. Apart from credit information sharing, they looked at interest rate spread. It was concluded that rate of interest spread negatively affect loan repayments in banks as it increases cost of loans. The findings also indicated that regulatory environment, including CIS, affects the interest on loans charged to customers based on their character and past payment behavior. The study however lacked depth on credit information sharing market which was in its infancy.

A study carried out in Central, Eastern and South-eastern Europe (CESEE) between 1998 and 2011 established that high cost efficiency could demonstrate the fact that low resources are applied to monitor credit risks which in the long run may lead to increase of their NPL's (Klein, 2013).

2.5 Conceptual Framework

The Central Bank Prudential guidelines classify commercial bank loans between performing and NPLs. Performing Loans are those which a borrower has adhered to contractual obligations whereas NPLs are the ones where a borrower has failed to meet the contractual obligations under the loan contract. This classification applies to

all types of credits granted by Banks: In the case of installments loans, with monthly repayments, a loan becomes non performing when it is 90 days overdue; in the case of revolving facilities, a loan becomes non performing when it remains above the authorized limit for more than 90 days; while in the case of open credit facilities, the credit becomes non performing when it falls in arrears in three consecutive cycle payments.

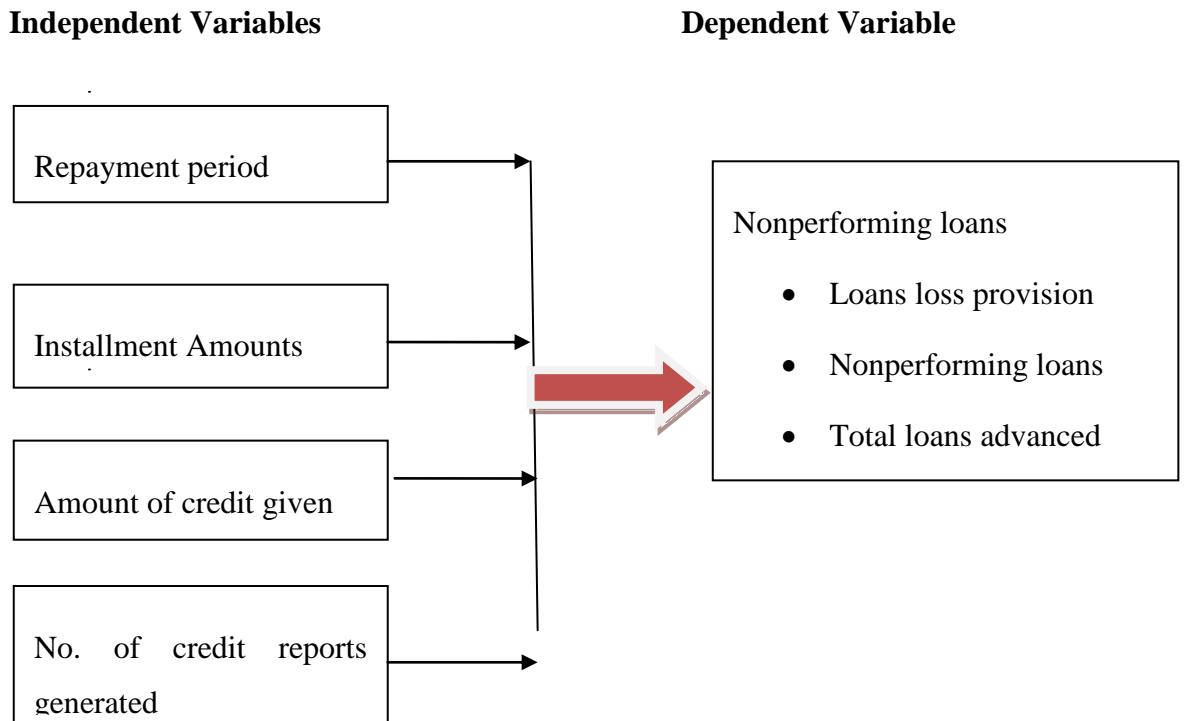
NPLs are grounded in the theory of Information Asymmetry, Loanable funds theory, moral hazard theory and the adverse selection theory. These theories explain the possible outcomes of loan contracts depending on quality and quantity of available information to the lender when appraising credit to the borrower. The theories also touch on the borrower characteristics and the lenders appraisal process.

The focus of the research and which constitutes the conceptual framework is to assess the effect of CIS on NPLs. Does credit Information sharing impact on the soundness of the decisions made by lenders? Can it minimize the possible losses that occur as a result of borrowers defaulting on their loan obligations?

Information that is shared from borrowers' credit histories includes: Initial Loan granted; Outstanding balances as at the time of reporting; Amount of installments payable; Period of the loan; Repayment cycles; Types of credit facilities and Borrowers income.

NPLs are measured by the ratio of total advances against the total provisions made in respect of loans that have become overdue. The research will therefore focus on investigating the effect of lending when banks were not sharing this information and the effect when they started sharing the information.

This is illustrated below:



Source: Author (2016)

2.6 Summary of the Literature

The above literature review provides a strong contention that credit information sharing is good for lenders and the country as a whole because it brings about efficient lending and, therefore, enhances investing of loan funds in productive projects. However, some other arguments show that credit information sharing can itself cause poor lending as a result of the nature of information stored, its accuracy and the manner in which the holder of the information wants to use it. Credit information sharing is useful the moment it becomes comprehensive, accurate and available to all lenders.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter focuses on research design, study population, data collection and data analysis.

3.1 Research Design

A research design is a plan that guides a researcher on how to organize the research activities (Bryman & Bell 2003). A research design presents a framework or arrangement of action for a study. A descriptive research design was adopted. A descriptive research provides a comprehensive picture of a circumstance or a situation. It is normally done in order to determine and be in a position where one can describe features of the given variable of interest for a certain situation. The causal/explanatory design is to establish the predictive power of explanatory variables, since this study is concerned with accepting or rejecting the hypothesis stated in chapter one.

3.2 Population of Study

The study targeted all 42 Kenyan commercial banks. The target population deals with guidelines and procedures regarding issuance and appraisal of loans, secondly the choice of the population of commercial banks is because secondary data on non-performing loans, loan provisions, interest rates and lending volumes can readily be obtained from annual Bank supervision records from CBK.

3.3 Data Collection Technique

Secondary data required for this study was collected from CBK loan book, CBK annual bank supervisory reports, and was used in the analysis. The data required was compared in two faces: 2006 to 2010 and 2011 to 2015. Data collected for both depended, independent and moderating variables included; Total gross loans, Loan loss provisions, Non-performing loans, No of credit file/reports shared. Data collection schedules attached at the appendix section was used to capture the above highlighted data for analysis and drawing a conclusion.

3.4 Data Analysis Techniques

Collected data was analyzed using Statistical Package for Social Science (SPSS version 22). Descriptive statistics like mean, standard deviation, quartiles, skewness and kurtosis was run on data collected. The output was as below:

One sample statistics.

	N	Mean	Standard deviation	Standard Error
Difference	42 Banks	\bar{d}	s_d	SE

One sample t-test

Test value =0					
	t value	df	Sig.(2-tailed)	Mean difference	95% confidence Interval Lower Upper
Difference		n-1	P values	\bar{d}	

3.4.1 Model Specifications

The study used t-test to get differential effects of panel data for ex-ante and ex-post Credit Information Sharing. The independent t-test will compare the means between NPLs before the introduction of CIS and after the use of CIS five years before and five years after.

3.4.2 Test of Significance

The study t-test was subjected to 95% significance level.

3.4.3 Test of Differences

The study conducted a test of differences for the ten year period of analysis. The half split that will be as of 2010 when CIS commenced provides 5 years prior and five year after 2010. This will give a two time differential. The study was then given a comparative analysis of the differential periods. The illustration of paired test of differences method is shown below:

We consider all the observations from the 42 commercial banks which constitute our sample.

Let $x = \text{NPL before CIS}$; and let $y = \text{NPL after CIS}$

We test the null hypothesis that the true mean difference is zero.

Step 1: Calculate the differences ($d_i = y_i - x_i$) between the two observations on each pair.

Step 2: Calculate the mean difference \bar{d} .

Step 3: Calculate the standard deviation of the differences, s_d .

Step 4: Calculate the value of the t statistic: $t = \frac{\bar{d} - \mu_o}{s_d / \sqrt{n}} \sim \text{t-distribution with } df = n - 1$

Whereby \bar{d} is mean difference of the before and after CIS value, μ_0 = the hypothesized value for the mean paired difference which is 0, s_d is the standard deviation of the mean difference while n is the number of observations which will be 42.

$$\bar{d} \pm t \left(\frac{s_d}{\sqrt{n}} \right)$$
 Where t will come from the appropriate quartile of t-distribution df = $n - 1$. The interval will be provided as having $100(1 - \alpha)\%$ chance of covering the true mean paired difference.

Under the null hypothesis, this statistic follows a t-distribution with $n-1$ degrees of freedom.

STEP 5: Conclusion

We use the tables of the t-distribution to compare the value for t to the t_{n-1} distribution. This will give the P-Value for the paired test.

If $P < 0.05$ then the two pairs are significantly different.

If $P > 0.05$ then the two pairs are not significantly different.

The study will alongside undertake a multiple linear regression analysis to determine the effect of CIS on NPLs. CIS was proxied by the number of credit reports shared and reports requested. Gettee (2012) used a similar model in evaluating effects of CIS. Thus, the model will be

$$NPL = \beta_0 + \beta_1 CRS + \beta_2 CRR + \epsilon$$

Where

NPL = NPLs measured as the ratio of NPLs to total loans and advances

CRS = credit reports shared measured as the total annual reports shared with CRBs

CRR = credit reports requested measured as the total annual reports requested from CRBs on borrowers creditworthiness

β_0 = Models intercept

$\beta_{1,2}$ = model's coefficients

ε = the random error term.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the findings on the impact of CIS on NPLs in Kenyan banks. CIS is facilitated by CRBs licensed by CBK and involves exchange of credit performance data held by banks on their customers. In Kenya, there are three licensed CRBs, namely; CRB Africa licensed in 2010 and later became TransUnion (K) Ltd after it was acquired by TransUnion Corporation Ltd of the United States of America (USA) that also has operations in South Africa and other countries in Africa, Metropol CRB Ltd licensed in April 2011 and Credit Info (K) Ltd which was licensed in 2014. Metropol CRB Ltd is the only indigenous Credit Bureau. The other two Bureaus have operations in America, Europe, Asia and parts of Africa.

The official launch of CIS in Kenya was in July 2010. Thus, to bring out the effect of two variables, collected data covered a period between 2006 and 2015. The study conducted a test of differences for ten year period analysis. The half split that is of the study period provides 5 years prior and **five year after 2010**. The study used descriptive statistics and mean differences through t-tests to establish the relation between NPLs and CIS.

4.2 Reliability

Reliability of the data was tested using Cronbach's Alpha. The data had a Cronbach's Alpha score of 0.873 meaning that the same was suitable for further analysis as the score indicates a good measure of reliability of the test data.

4.3 Descriptive Analysis

The data presented below shows that the minimum value of the credit information entries was 0 although this is attributed to the time of commissioning of the same by the CBK.

Table 4.1: Annual Data on Credit Entries

Annual Data	Credit Reports	Credit reports	Credit	Non-
	Shared	requested	worthiness	performing
2011	256,062	256,902	0.421	0.021
2012	282,312	260,039	0.438	0.011
2013	296,571	261,309	0.448	0.024
2014	302,152	289,303	0.454	0.025
2015	332,626	299,349	0.468	0.013
Minimum	256,062	256,902	0.421	0.026
Maximum	332,626	299,349	0.468	0.071
Mean	293,945	273,380	0.446	0.034
Standard Deviation	28,022	19,514	0.02	0.022
First Quartile	282,312	260,039	0.438	0.22
Second Quartile	296,571	261,309	0.448	0.017
Third Quartile	302,152	289,303	0.454	0.014

Analyzing the data descriptively, it is shown that in 2011 the credit worthiness stood at 42.1%, 43.8% in 2012, 44.8% in 2013, 45.4% in 2014 and 46.8% in 2015. On average the credit worthiness was calculated at 44.6% with the standard deviation being approximated at 3.4%. On NPLs, Table 4.1 shows that the minimum in NPLs stood at 2.6% while the maximum was 7.1%. The average of the non-performing loans in the 5 year analysis was estimated at 3.4%. The standard deviation calculated of 2.2% indicated little variation from the mean.

4.4 Trend Analysis on Credit information Sharing

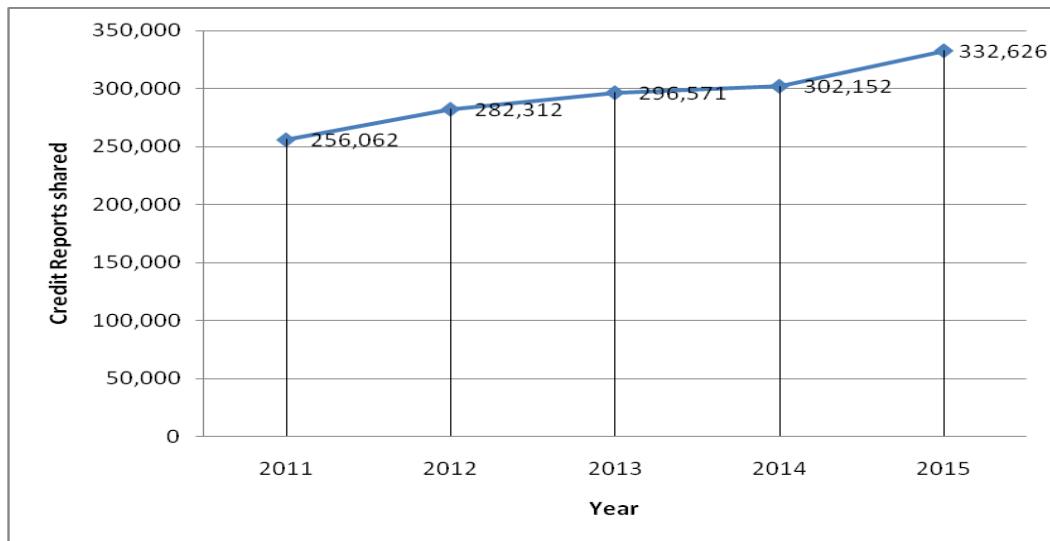


Figure 4.1: Trend Analysis

Source: Research Data

In the months starting January-2011 to December-2015, the trend results show that the number of credit reports shared by banks has been generally increasing.

4.5 Model Summary

Model	R	R Square	Adjusted R Square (R^2)	Std. Error of the Estimate
1	.867a	.751	.739	.35681

The model had an average coefficient of determination (R^2) of 0.735 and which imply that 73.9% of the variations in NPLs of Kenya banks are caused by independent variables under study (Credit reports requested, Credit Reports shared and credit worthiness).

Table 4.2: Analysis of Variance

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1.902	3	.634	5.512	.001b
Residual	.003	31	.000		
Total	1.905	34			
Critical value = 2.588					

Source: Research data, 2016

From ANOVA statistics, the study established that regression model had a significance level of 0.1% which is an indication that data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the tabulated value ($5.512 > 2.588$) an indication that credit reports shared, credit reports requested and credit worthiness all have a significant effect on NPLs of Kenyan banks. The significance value was less than 0.05 indicating that the model was significant.

4.6 Pre and Post-Credit Information and Non-performing loans

The study further conducted an independent t-test to establish whether there is a significant difference in means of NPLs before and after CIS.

Table 4.3: Group Statistics - Mean Differences

Period	N	Mean	Std. Deviation	Std. Error
			Mean	
Before Credit information sharing (2006-2010)	39	3.49E+11	1.241E+10	4.137E+09
After Information Sharing (2011-2015)	39	3.07E+11	1.285E+10	4.897E+09

From the results presented in Table 4.2, the means of the annual NPLs before CIS was 3.49×10^{11} compared to 3.07×10^{11} after CIS. This depicts that NPLs were higher before CIS than after. This underscores the fact that credit information sharing had an impact on the reduced loan defaults.

Table 4.4: Independent Samples Test

Levene's Test for Equality of Variances		T-Test For Equality Of Means					
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.151	.703	-6.061E+00	15	.000	-3.859E+10	6.367E+09
Equal variances not assumed			-6.020E+00	14.219	.000	-3.859E+10	6.411E+09

Levene's Test for Equality of Variances tells if Non-performing loans before and after credit information sharing have an approximated equal variance on dependent variable. If the Levene's Test is significant (the value under "Sig." is less than .05), the two variances are significantly different. If it is not significant (Sig. is greater than .05), the two variances are not significantly different; that is, the two variances are approximately equal. From Table 4.4, Levene's significance is .703, which is greater than .05; variances are approximately equal.

Following from Levene's test, a T value of -6.06 is established at 15 degrees of freedom. A t-significance value of $p < 0.001$ was also established; thus, a significant difference between the two groups (significance is less than .05). Thus, the findings establish a significant difference between NPLs before and after credit information sharing. Combined together with the results in Table 4.4, the findings illustrate that NPLs are reduced by CIS.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Chapter five presents the summary of findings of this research, conclusions and recommendations based on research findings, the limitations of the study and suggestion of areas which may require further consideration as far as future research is concerned.

5.2 Summary

Credit information sharing was launched in Kenya in July 2010 and within the first annual count, 246,869 credit reports had been shared. On average 262,312 credit reports are requested annually though this is subject to a fluctuation calculated by the standard variation of 98,523. On average the credit worthiness was calculated at 33.6% with the standard deviation being approximated at 8.6%. The study showed that the minimum in NPLs stood at 2.6% while the maximum was 7.1%. The average of the non-performing loans in the 10 year analysis was estimated at 3.4%. The standard deviation calculated as 2.2% indicated little variation from the mean.

The trend results showed that the number of credit reports shared by banks had been generally increasing. It was however noted that there had been a sharp decrease followed by sharp increase these show that the demand for credit reports varies from time to time. The findings in the analysis showed that CIS accounted for 73.9% changes in nonperforming loans in Kenya.

NPLs were lower after credit information sharing than before: mean before; 3.49×10^{11} compared to 3.07×10^{11} after the CIS. A t-significance value of $p < 0.001$ was

established; depicting a significant difference between performance in financial perspective with CIS resulting in reduced loan defaults and non-performing loans.

5.3 Conclusion

CIS helps to correct information asymmetry between lenders and customers (borrowers) thereby allowing lenders to collect and share data of potential customers. It is expected that lenders will start using credit scores generated by Credit Bureaus to price loans based on the borrower's risk profile as measured by the score.

By the same token, CIS has also helped lenders of funds to recover loans. That is, when borrowers are aware that their information if being shared, they likely strive to repay their loans since they can benefit from being charged a lower rate of interest, as the lenders usually go for customers (borrowers) with good loan repayment history. This has enabled many previously unbanked people to borrow from banks very small amounts of loans particularly over the mobile phone platforms. The result has been that access to credit has drastically increased and according to the World Bank doing business report for 2015, Kenya has moved to position 28 from the earlier position of 128 on the global index of financial inclusion and to position 3 on the African continent.

5.4 Recommendations

Based on these study findings, government need to strengthen credit-information regulations and include other credit providers like SACCOs, MFIs, DFIs, utility firms like water and electricity suppliers and providers of goods and services and also create awareness for the same. The study also recommends an analysis of credit information sharing on financial inclusion.

5.5 Limitations of the Study

This study experienced limitations on the accuracy of data that banks are sharing with CRBs. Banks were initially listing customers whose accounts were overdrawn due to bank charges without the knowledge of the customer. In such cases there was no formal borrowing contract and classifying this as default is actually incorrect. This affected the number of credit accounts submitted to the CRB as not all accounts were default accounts. However the number of such accounts is small and would not significantly affect the result of the study. Other limitations involved the correct classification of a default on revolving facilities like credit cards and overdrafts. But this was determined that staying above the limit for 90 days would constitute a default even if the limit has not expired.

5.6 Suggestions for Further Research

When the banking act was amended in the Finance Bill of 2007 to allow banks to share information on their customers, it only mandated the sharing of default data. This was provided for in the CRB regulations 2008. Banks started sharing default information from 2010 following the licensing of the first Bureau. A new amendment to the banking act was again passed in 2012 to mandate banks to share both performing and nonperforming data on their customers. This became effective from 2014 under the CRB regulations 2013. Thus the study covered four years of sharing non performing data and only one year of sharing performing data.

It is therefore clear that the period for which banks have been sharing full file information is not long enough to determine the full impact of the mechanism on NPLs. This is so because as new borrowers enter the credit market more defaults will occur and further research is required to determine the extent to which the new NPLs are impacted upon by CIS.

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Appendix I: Data Analysis Sheet

Name of Data Clerk:.....

Date:.....

Checked by:.....

	Pre-CIS					Post-CIS				
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Dependent Variable										
Loan Loss Provision										
Non-Performing Loans										
Total Loans Advanced										
Independent Variables										
No. of Credit reports shared										