

**THE RELATIONSHIP BETWEEN CREDIT INFORMATION SHARING AND
LOAN PERFORMANCE-CASE OF COMMERCIAL BANKS IN KENYA**

BY:

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DECLARATION

Student's Declaration

This research project is my original work and has not been submitted to any other University or institution of higher learning for any academic award.

Signed..... Date

Jeremiah N. Nyangweso

D63/75243/2012

Supervisor's Declaration

This research project has been submitted for examination with my approval as the University Supervisor.

Signed..... Date

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DEDICATION

This project is dedicated to my father Johnstone Nyangweso, my mother Keresensia Moraa, who endowed me in early years with a lifelong thirst for knowledge and passion for work your contribution has been invaluable and timeless; my brothers and sisters, my nephews Jimmy, Davis, Hezron, my friends I love you all and may God's blessings be showered upon you all.

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ABSTRACT

Banks in Kenya for a long time have had a high rate of loan default from the borrowers which have caused significant losses to them. This is due to the fact that the respective banks have different credit information about their borrowers and therefore these loan applicants have taken this loop-hole to get multiple loans from these banks which increase their rate of default due to the fact that they might fail to service back all these loans.

The objective of this study was to investigate the effect of credit information sharing on loan performance as one these factors in the blend. Credit reference bureaus are information brokers operating on the principle of reciprocity, collecting, filing and distributing the information supplied voluntarily by their members. They allow its members easy access and ready use of such data for credit appraisals purposes. The researcher used Statistical Package for Social Sciences (SPSS, Version 17.0) to analyse time series empirical data to examine the relationship between credit information sharing and loan performance by establishing correlation coefficients between the aggregate number of credit reports requested by forty two commercial banks and their aggregate loan performance as measured by level of non-performing loans. The study employed descriptive as well as correlation research designs from August 2010 the period of inception of Credit Information Sharing to April 2013.

The findings were that loan performance as measured by loan default rate is negatively related to credit information sharing (credit reports) , lending rate and total loans. The negative relationship between default rate and total loans is in tandem with Ndungu (2002), Brown (2007) and Mwangi and Sichei (2009) findings and government objective of launching credit referencing while the negative relationship between default rate and credit information is consistent with Pagano (2000) and Mwangi and Sichei (2009).

Therefore, use of credit information sharing in credit appraisal process was found to be of great significance.

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ABBREVIATIONS

ANOVA – Analysis Of Variance

CBK- Central Bank of Kenya

CIS – Credit Information Sharing

CRB –Credit Reference Bureaus

CRR – Credit Reference Reporting

GDP - Gross Domestic Product

GNP – Gross National Product

KBA- Kenya Bankers Association

KCPA- Kenya Credit Providers Association

KCSI- Kenya Credit Information Sharing Initiative

MFI – Mortgage Finance Institutions

MPT – Modern Portfolio Theory

NPL- Non Performing Loans

PG –Prudential Guidelines

ROTA – Return on Total Assets

SMEs – Small and Medium Enterprises

TL - Total Loans

WCOC – Working Capital Operating Cycle

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The role of banks is to safeguard and help grow clients' resources while extending credit for their economic benefit. Therefore, banks in the year 2007 supported the change in regulation which formalised Credit Information Sharing (CIS) and introduced the country's first Credit Reference Bureaus (CRBs). Not to be mistaken as 'blacklisting', CIS allows credit providers (including banks, utility and telecommunications companies) to share data that is collected by licensed CRBs. This sharing of vital information helps creditors draw a distinction between high and low risk borrowers. Previously, credit providers penalised good borrowers by spreading the risk (and costs of credit) across their portfolio. With this new system, good borrowers are better positioned to negotiate interest rates. Ultimately, CIS enhances efficiency in the credit system and lowers costs making it easier for banks to lend on basis of their clients' individual credit track record (Kenya Credit Information Sharing Initiative, 2011)

Kenya's banks work together with the regulatory and interest groups to increase access to credit through formal banking services. The idea underlying information sharing is, "The best future predictor behaviour is past behaviour" (Miller, 2003). In practice, it is an arrangement by which lenders contribute information about their customers to a common pool which is accessible to all lenders that contribute. This is the work of credit bureaus (Miller, 2003). Consumer credit bureaus emerged in the United States in the late 19th century. Other early adopters include; Austria, Sweden, Finland, Canada, Germany and Australia (Jappelli & Pagano, 2006)

It is difficult to have accurate information on the financial ability of prospective borrowers and their credit history. This makes it extremely difficult for lenders to assess the credit worthiness of potential borrowers and their ability to pay the loans. It also makes it difficult for lenders to price the risks because the borrowing cost is not the same and that should be reflected in the interest rate pricing. The very endurance of a bank in the marketplace fatefully depends on its ability to collect and process information

professionally in screening credit applicants and monitoring their performance (Brown, Jappelli and Pagano, 2006). At the screening stage, lenders need information about borrowers' uniqueness including the risk of their investment projects. After credit is granted, lenders need information to control the measures taken by the borrower because they may relax their efforts to avoid default or hide the proceeds of their business to avoid repaying their debts.

1.1.1 Credit Referencing

Credit referencing is basically a system where details about an individual's record with credit is tracked, monitored and scored. According to Brown, Jappelli and Pagano, (2006); credit information sharing is to collect and collate credit financial data on borrowers including individuals, businesses, companies, sole proprietors, companies and Government entities. A credit reference bureau is a company that provides credit information on borrowers. The credit information is sourced by the credit reference bureau from the banks and financial institutions and from the companies' registries in respect of companies.

The credit information collected on individuals can be made available to financial institutions upon request. Since financial institutions do not like customers who do not pay their loans, a borrower who has a good credit history is more likely to get a loan and at a reasonable interest rate. According to Zehnder (2007) on Credit Reference Reporting (CRR), relationship banking, and loan repayment; CRR arose from the demand by financial institutions to hedge and diversify credit risk, but they have now become a major investment tool as well. Almost all credit referencing take the form of the credit default swap, which transfers the default risk of one or more corporation's entities from one party to the other (Galindo and Miller, 2001).

1.1.2 Credit Information Sharing

Credit Information Sharing (CIS) is a process where banks and other credit providers submit information about their borrowers to a CRB 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”.

A Credit Report is a report generated by the Credit Reference Bureau (CRB), containing detailed information on a person's credit history, including information on their identity, credit accounts, loans, bankruptcies, late payments and recent inquiries. It can be obtained by prospective lenders only when they have a permissible reason as defined in law, to determine their credit-worthiness.

CIS is the exchange of information on client financial histories (Brown, Jappelli, & Pagano, 2009). Sharing of credit information can make an important contribution to the development of the financial system which is a crucial determinant of economic growth (Doblas-Madrid & Minetti, 2009). Credit scores have immense benefits to both lenders and borrowers. Borrowers are able to negotiate with lenders on better terms. Highly rated borrowers with good credit history can convincingly negotiate for lower interest rates or even waiver of collateral (Bennardo, Pagano, & Piccolo, 2009).

Houston, Lin, Lin, & Ma, (2010) show that information sharing mechanisms reduce adverse selection by improving the pool of borrowers and the knowledge of applicants' characteristics therefore improving bank efficiency in the allocation of credit. Based on some case studies, Olweny & Shipho, (2011) points out that CIS plays a key role in improving the efficiency of financial institutions by reducing loan processing costs as well as time required to process loan applications. Lin, Ma, & Song, (2012) show that information sharing institutions; through their incentive effects on curtailing imprudent behavior of borrowers are also valuable in addressing moral hazard problems. Besides, they show that information sharing helps to reduce average interest rates and information rent that banks can otherwise extract from their clients, reduce or even eliminate the information advantage of larger size banks and therefore should enhance credit market completion (Kusa & Okoth, 2013)

Due to the increasing spate of Non-Performing Loans (NPLs), the Basel II Accord emphasized on credit risk management practices. Compliance with the Accord means a

sound approach to tackling credit risk has been taken and this ultimately improves bank performance. Through the effective management of credit risk exposure, banks not only support the viability and profitability of their own business, they also contribute to systemic stability and to an efficient allocation of capital in the economy (Psillaki, Tsolas, and Margaritis, 2010). CIS is one way to screen loan applicants in order to mitigate defaults on loan advances. CIS also known as Credit Reporting is 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 (KCISI, 2008). It also enables banks to know how borrowers repay their loans. Globally, the biggest problem facing commercial banks is the non-repayment of loans. Thus, the idea of establishing a CRB was conceived in order to enable banks in: sharing information on default among banks (Pagano, 2000), eliminating corrupt borrowers – those with the aim of borrowing from different financial institutions with the aim of defaulting, providing commercial professional credit reference to prospective foreign investors and also identifying honest/credible borrowers based on known history and character. Services of CRBs were first introduced in London and have now spread to other countries worldwide (Sacerdoti, 2005).

CRBs thrive in a good legal environment where there is data protection law, a fair credit reporting law, a data retention law, consumer protection admissibility of electronic evidence and certification of electronic signatures; without which credit reporting becomes a shenanigan (Sacerdoti, 2005)

1.1.3 Loan Performance

Loan performance refers to the financial soundness of a bank that depends on the performance of their disbursed loan to various sectors. It also means how the loans were scheduled to act and how they are actually acting in terms of the scheduled payments compared to the actual payments. It is closely associated with timely and steady repayment of interest and principal of a loan (Rosenberg, 2009). Section 3.2 of the prudential guideline for institutions licensed under the Banking Act (2006) states that in the determination of the classification of loans and advances, performance will be the

primary consideration. The performance will generally show the repayment capability of the borrower. All loans shall be classified into the five categories using the criteria provided in to either normal, watch, sub-standard, doubtful and loss (CBK/PG, 2006).

Credit Scoring is a credit analysis technique used extensively by banks, credit card companies, finance companies and other financial institutions involved in making consumer credit decisions. The company identifies a range of key financial and other variables and each is given a relative weighting or ranking. For instance, home ownership, salary/income range, bank reference and other credit references are normally identified as four of a range of key evaluation variables (Grover, 2002). The customer completes a detailed application form, which is assessed by a member of the credit selection staff.

Credit Reference Reporting (CRR) is a framework structure in which registered Credit Bureaus gather and store consumer information from credit providers and in turn avail the information to authorized users at a fee, mainly for the purpose of appraising credit allocation.

1.1.4 Relationship between Credit Information Sharing and Loan Performance

In lending, the problem of asymmetric information stems from the fact that a lender's knowledge of a borrower's likelihood to repay (their "risk profile") is imprecise and must be inferred based upon available information. The lender cannot solely rely on information provided by the applicant but must verify the information. Pagano and Jappelli (1993) show that CIS reduces adverse selection by improving bank's information on credit applicants.

CIS can also create incentives for borrowers to perform in line with banks' interests. Klein (1982) shows that CIS can motivate borrowers to repay loans when the legal environment makes it difficult for banks to enforce credit contracts. In this model, borrowers repay their loans because they know that defaulters will be blacklisted thus reducing external finance in future. Vercammen (1995) and Padilla and Pagano (2000)

show that, exchange of information on defaults by banks motivate borrowers to put more effort in their projects.

Padilla and Pagano (1997) show that CIS can also mitigate hold-up problems in lending relationships by eliciting more competition for borrowers thereby reducing the informational rents that banks can extract. The reduced hold-up problems can elicit higher effort by borrowers and thereby make banks willing to lower lending rates and extend more credit.

In a theoretical model of information sharing, Miller, (2003) show that exchange of information on borrower type reduces average interest rates. In a related paper Powell, (2004) show that information sharing among borrowers would lead to lower interest rates. Information-sharing can lower average interest rates in several ways. These dynamics have been borne out both theoretically and empirically. First, without information on borrowers' risk profiles, a lender will mistake good risks for bad and vice versa. The portfolio, therefore, will consist of more risky loans and, over time, as interest rates adjust to reflect loan performance, higher rates. Secondly, higher rates create incentives to engage in riskier projects, as lower-risk projects will not yield the return to compensate for the costs of the loan. Lin et al., (2012) shows that risky projects come to account for a larger share of the portfolio, thereby driving up the average rate. When information is shared, the ability to screen out riskier borrowers improves the portfolio's performance and allows lenders to offer lower rates to less-risky borrowers who would not have borrowed otherwise.

1.1.5 Banking Sector and Credit Information Sharing In Kenya

Credit information sharing is a relatively new concept in Kenya: Banking (credit reference bureau) regulations 2008 that govern licensing, operation and supervision of credit bureaus by Central Bank of Kenya were gazetted and operationalised in 2009 (Ioannidou & Penas, 2010). Lenders can improve their knowledge about new customers through credit reference bureaus. Credit reference bureaus are information brokers that collect, file and distribute the information voluntarily supplied by their members. The

Central Bank of Kenya has licensed two Credit Reference Bureaus i.e. Credit Reference Bureau Africa Limited and Metropol Credit Reference Bureau Limited (CBK, 2013).

Credit reference bureaus gather information on the payment history and accounts of borrowers. CRBs collect and distribute two major types of data i.e. 'white' and 'black' information. 'Black' information usually refers to negative consumer data, (information about defaults on payments, delays, delinquencies, bankruptcies etc). That is, information with a negative connotation on the payment history and the financial behaviour of the data subject. 'White' information, by contrast, refers to positive consumer data, i.e. information about the financial standing, payments and other details which do not indicate a default or a late payment (CBK supervision report, 2013).

At inception of CIS financial institutions had limited scope on information about their clients that is to be shared but the Central Bank of Kenya has widened the risk assessment mandate of lending institutions in a move that could leave thousands of potential borrowers with poor credit scores and expose them to higher interest rates or deny them loans (Kusa & Okoth, 2013).

1.2 Statement of the Problem

Credit markets present asymmetric information problems. Lenders (commercial banks) know neither the past behavior nor the intentions of credit applicants. Credit scoring models based on credit bureau data suggests that the use of credit reports allows lenders to more accurately predict loan defaults (Kallberg and Udell, 2003). Information sharing disciplines borrowers to repay loans (Brown and Zehnder, 2008) and aggregate credit market volume is higher in countries where information sharing is more developed (Jappelli and Pagano, 2002; Djankov et al., 2007).

Lin et al., (2012) carried out a survey on bank competition, credit information sharing and banking efficiency in USA and found a negative relationship between credit information sharing, competition and banking efficiency. Pagano and Jappelli (1993) show that information sharing mechanisms reduce adverse selection by improving the pool of borrowers and therefore improve bank efficiency in the allocation of credit.

Miller (2003) points out that credit information sharing plays a key role in improving the efficiency of financial institutions by reducing loan defaults. Several studies have demonstrated that information sharing is beneficial to credit market performance and helps lenders to select good borrowers (Pagano and Jappelli, 1993) and reduce non-performing loans and the costs of firm financing (Brown, Jappelli and Pagano, 8 2009).

Ndung'u (2002) in his study adds that information asymmetry problem has been a contributory factor to high levels of non-performing loans in the Kenyan banking sector which facilitated the Central Bank of Kenya to develop a credit information sharing initiative; Kabiru (2002) did a study on the relationship between credit risk assessment practice and the level of non-performing loans of Kenyan banks. Mumi (2011) studied the impact of credit referencing on financial performance of financial institutions in Kenya. Little research studies have been done on the relationship between credit information sharing and loan performance of commercial banks, yet it is through information sharing that lenders are able to analyze borrowers to minimize default rate. This study therefore undertakes to carry out research on the relationship between credit information sharing and loan performance of commercial banks in Kenya.

1.3 Objectives of the Study

1.3.1 Main Objective

The general objective of this study is to assess whether there exists a relationship between credit information sharing and loan performance of commercial banks in Kenya.

1.3.2 Specific Objectives

- a) To determine how credit information sharing affects non-performing loans portfolio and loan performance.
- b) To establish a relationship between volume of lending and loan performance of commercial banks in Kenya.

1.4 Significance of the Study

This research study is intended to establish whether there exists a relationship between credit information sharing and loan performance of commercial banks in Kenya. Thus, the findings of this study will be useful to the following:

Managers of Commercial Banks- the findings of this study will aid in their decision making with regard to loan application evaluation and assess the influence of credit referencing on the overall level of non-performing loans in the banks' books.

Central Bank of Kenya – the findings of this study will provide information which may be used to improve policy formulation and amendments on the credit reference bureaus and their operation hence aid in development of policies necessary to enable a conducive environment for the banks and loan applicants to promote Kenya's economic growth and performance.

The Public- It will reveal what needs to be done to improve information sharing which will translate into increased access to credit and reduced cost of capital.

Financial Institutions- it will provide a framework for better information sharing through credit reference bureaus which will enhance information symmetry, ease adverse selection and counter moral hazard which will significantly reduce the non-performing loans portfolio.

The Government will also benefit as this research will propose ways of addressing challenges facing CIS in Kenya. This research can help to make Policy changes to the Banking (Credit Reference Bureau) Regulations 2008 that govern the licensing, operation and supervision of credit reference bureaus by the Central Bank of Kenya.

Scholars who are interested in further research in this field will be able to investigate any research gap in the study not researched or be under researched by the researcher in the course of providing the evidences supporting the research topic and research problems

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section draws on literature in the area of credit information sharing and loan performance of commercial banks. This chapter will review literature from other scholars to build the foundation of this study. The material is of importance to this study as it will form the basis for the observations which will be made during the study in line with the study objective.

2.2 Review of Theories

2.2.1 Information Asymmetry Theory

Information asymmetry deals with the study of decisions in transactions where one party has more or better information than the other. This creates an imbalance of power in transactions which can sometimes cause the transactions to go awry, a kind of market failure in the worst case (Yun, 2009). Finance theory postulates that information asymmetry can constrain all types of external financing by either limiting availability or increasing costs. Consequently, information asymmetry should affect the acquisition and use of bank lines since short-term bank credit is a primary external source of firm liquidity. Other studies argue that the use of short-term bank credit mitigates capital market frictions through increased monitoring and reduced information asymmetry (Faulkender and Petersen, 2006). Existing 12 empirical researches suggest that information asymmetry can have an important impact on bank lending and that limitations exist for certain firms in using bank lines as liquidity substitutes (Hardin and Hill, 2010). On a direct basis, information asymmetry impacts a lender's willingness to lend. Additional risk comes with uncertainty in firm level performance and greater variability in investment opportunities. A large portion of related monitoring costs is likely transferred to borrowers in the form of higher interest rates and data collection costs which may lead to some borrowers reducing their use of bank lines of credit. Moreover, if monitoring is imperfect and the lenders cannot eliminate information asymmetry, bank credit may be rationed for opaque firms. On an indirect basis,

information asymmetry may also influence line of credit availability and use since some sources of repayment are based on access to public capital markets (Hardin and Hill, 2010). While banks typically use measures of operating cash flow to evaluate debt service and repayment capacity, in many cases access to public debt and equity markets is the primary repayment source for borrowings from bank lines of credit (Faulkender and Petersen, 2006). Firms facing greater information asymmetry are more likely to be constrained in the public capital markets and may have less ability to reduce or pay off their lines of credit drawn as expected. Since information asymmetry problems increase the monitoring costs and risks for lenders, less transparent firms are less likely to obtain and then use lines of credit as an alternative source of liquidity.

2.2.2 Theory of Financial Intermediation

The theory of financial intermediation suggests that one key function of relationship banking is to overcome informational asymmetries between the lender and the borrower. Repeated interaction enables lenders to produce information about the creditworthiness of borrowers (Levine, Loayza, & Beck, 2000). This “information view” of relationship banking provides a strong rationale for the widely observed discretion of loan officers in credit assessments. The incorporation of soft information about a client’s creditworthiness in credit analyses requires a rating process in which loan officers can complement financial statement analysis with qualitative information about the client’s credit-worthiness.

Current theories of the economic role of financial intermediaries build on the economics of imperfect information that began to emerge during the 1970s with the seminal contributions of (Diamond, 1984) and (Scholtens & Van Wensveen, 2000). Financial intermediaries exist because they can reduce information and transaction costs that arise from an information asymmetry between borrowers and lenders. Financial intermediaries thus assist the efficient functioning of markets, and any factors that affect the amount of credit channeled through financial intermediaries can have significant macro-economic effects.

2.2.3 Portfolio Theory

Modern Portfolio Theory (MPT) proposes how rational investors should use diversification in order to optimize their portfolios. It also discusses how a risky asset should be priced. This does not mean that the early economists ignored financial markets. Fisher (1930a) had already outlined the basic functions of credit markets for economic activity, specifically as a way of allocating resources over time and had recognized the importance of risk in the process. In developing their theories of money, Keynes (1936), Hicks (1962) and Kaldor (1939) had already conceived of portfolio selection theory in which uncertainty played an important role.

Since the 1980s, banks have successfully applied modern portfolio theory (MPT) to market risk. Many banks are now using earnings at risk (EAR) and value at risk (VAR) models to manage their interest rate and market risk exposures. However, even though default risk remains the largest risk facing most banks, the practical of MPT to default risk has lagged (Margrabe, 2007). Banks recognize how credit concentrations can adversely impact financial performance. As a result, a number of sophisticated institutions are actively pursuing quantitative approaches to credit risk measurement, while data problems remain an obstacle. This industry is also making significant progress toward developing tools that measure credit risk in a portfolio context. They are also using credit derivatives to transfer risk efficiently while preserving customer relationships. The combination of these two developments has precipitated vastly accelerated progress in managing credit risk in a portfolio context over the past several years.

While the asset-by-asset approach is a critical component to managing credit risk, it does not provide a complete view of portfolio credit risk, where the term risk refers to the possibility that actual losses exceed expected losses. Therefore, to gain greater insight into credit risk, banks increasingly look to complement the asset-by-asset approach with a quantitative portfolio review using a credit model. Banks increasingly attempt to address the inability of the asset-by-asset approach to measure unexpected losses sufficiently by pursuing a portfolio approach. One weakness with the asset-by-asset approach is that it

has a difficulty in identifying and measuring concentration. Concentration risk refers to additional portfolio risk resulting from increased exposure to a borrower or to a group of correlated borrowers.

2.3 Review of Empirical Studies

A growing body of empirical evidence supports the hypothesis that information sharing enhances credit market performance. Analyses of credit bureau 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; Powell et al., 2004; Luoto et al., 2007). Experimental evidence by Brown and Zehnder (2007) shows that a public credit registry can motivate borrowers to repay loans when they would otherwise default.

Jappelli and Pagano (2002) show that strong Credit Information Sharing (CIS), institutions are positively related to the size of the credit market. Other empirical studies, including Jappelli and Pagano (1993), Love and Mylenko (2003), Galindo and Miller (2001) and Powell, et al. (2004) have shown that credit is more abundant when borrowers and lenders benefit from CIS institutions. Brown, Jappelli and Pagano (2006) find that CIS between lenders is associated with increased and cheaper credit in transition countries in Eastern Europe. Djankov et al, (2007) show that such three institutions are associated with higher ratios of private credit to gross domestic product. Berger, Frame and Miller (2005) demonstrate how such institutions increased the quantity of small business loans in the United States and more importantly served to expand credit to riskier and marginal borrowers – i.e. firms that, in the absence of CIS would probably not receive credit.

Although the valuation of default securities with methods of continuous time finance goes back to the first proposal of Black and Scholes (1973), this area of research has been largely ignored for a very long time. Only recently credit risk modeling and credit risk management received renewed attention, both by academics and practitioners alike. In March 1993, *Global Finance* carried an article, which said that three Wall Street firms (J. P. Morgan, Merrill Lynch, and Bankers Trust) were already then marketing some form of

credit referencing. Prophetically, this article also said that credit referencing could, within a few years, rival the \$4-trillion market for interest rate swaps. In retrospect, we know that this was right (Kothari, 2002). Credit referencing - already a topic frequently talked about in financial press in 1993, they initially faced a bit of resistance.

The introduction of mandatory submission of non-performing loan (NPL) data by Kenya's banking industry marks an important step of credit information sharing in the country's credit market. This achievement was the culmination of approximately ten years of deliberation during which time various laws and regulations were passed and a credit bureau licensed. After an extensive testing stage of the data transmission mechanism between February and June 2010, the process was considered ready for roll-out on 31st July 2010.

A study conducted by the Inter-American Development Bank, measured the impact of information sharing on loan performance. The IADB examined data from a 170 banks in Bolivia, Brazil, Chile, Colombia, Costa Rica, El Salvador, and Peru in order to measure the impact of private and public bureaus on loan performance. It found that banks which loaned primarily to consumers and small businesses and used private bureau data had non-performance rates that were *7.75 percentage points lower* than ones which did not (Worldbank, 2004). Jappelli and Pagano (2000) looked at 43 countries in their study including most Organization for Economic Co-operation and Development (OECD) countries and estimated that sharing of positive credit information reduced credit risk by between one third and one half.

2.3.1 Impact of Credit Information Sharing On Non-Performing Loans

The concern in Kenya is that financial institutions are not providing enough credit to new economic activities, and in particular, the expansion of small and micro enterprises (SMEs). Financial access surveys show that access to credit is a major problem especially in the rural areas (Financial Sector Deepening [FSD] 2006 and FSD and Central Bank, 2009). Specifically, the 2009 survey shows that 50 percent of the rural individuals had never used any credit service compared to 61.7 percent in 2006.

According to Sacerdoti (2005), among the reasons for lack of access to credit from banks in Sub-Saharan Africa are; inability of borrowers to provide accurate information on their financial status, absence of reliable and updated company and land registries, weak claim recovery and collateral realization process such as malfunctioning courts and cumbersome legal and judicial procedures. Other reasons include, long physical distance to the nearest financial services provider, high cost of the credit, socio-economic and demographic characteristics that make them less creditworthy. Although theory is ambiguous on the impact that information sharing will have on the credit market and the level of nonperforming loans, empirical evidence has provided plenty of evidence supporting the claim that CIS institutions have a positive effect on lending to the private sector. For instance, Jappelli and Pagano (2002) show that strong credit-sharing institutions are positively related to the size of the credit market. Other empirical studies, including Love and Mylenko (2003) and Galindo and Miller (2001) and have shown that credit is more abundant when borrowers and lenders benefit from CIS institutions. Brown, Jappelli and Pagano (2002) find that CIS between lenders is associated with increased and cheaper credit in transition countries in Eastern Europe.

In a theoretical model of CIS, Jappelli and Pagano (1993) show that exchange of information on borrower type decreases default rates and reduces average interest rates. In a related paper Padilla and Pagano (1997) show that information sharing among borrowers would lead to lower interest rates and increased lending. Empirically testing these predictions Jappelli and Pagano (2001) find that CIS is associated with higher lending, measured by private credit to GNP ratio, and lower defaults. Evidence also supports the theory that information sharing reduces moral hazard. Doblas-Madrid and Minetti (2010) find that if lenders enter CIS, their borrowers improve their repayment performance delinquent payments on leases and loans decrease. Brown, Jappelli and Pagano (2006) find empirical evidence that the lending market would collapse in the absence of information sharing institutions and reputational banking. However, their study also showed that establishing a credit registry encouraged borrowers to repay their loans by allowing lenders to identify borrowers with a good payment history. The study showed that an information sharing institution positively impacted the credit market.

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. In contrast, the effect on lending is ambiguous, because when banks exchange information about borrowers' types, the implied increase in lending to safe borrowers may fail to compensate for the reduction in lending to risky types. Banking competition strengthens the positive effect of information sharing on lending: when credit markets are contestable, information sharing reduces informational rents and increases banking competition, which in turn leads to greater lending.

Miller (2003) presents a comprehensive study of credit reporting systems in nearly 80 countries around the world. She discusses credit registries in both public and private credit sectors, investigates the view of credit reporting by borrowers and derives international trends in development of credit registries. Galindo and Miller (2001), using firm-level data from World scope, study how the quality of information in the registry affects financing constraints for firms in Latin America. They find that index of the information coverage in the credit registry is associated with reduction in the sensitivity of investment to availability of internal funding, indicating lower financing constraints. Unlike Galindo and Miller (2001) they use self-reported degree of financing constraints by firms rather than relying on the investment-cash flow sensitivity model, which has been questioned recently by numerous authors. In addition, they distinguish between public and private registries and investigate the differential effect of credit registries on small and medium firms and young and old firms.

The exchange of information between banks may also reduce the informational rents that banks can extract from their clients within lending relationships, as shown by Padilla and Pagano (1997) in the context of a two-period model where banks have private information about their borrowers. This informational advantage confers to banks some market power over their customers, and generates a hold-up problem: anticipating that

banks will charge predatory rates in the future, borrowers exert low effort to perform, resulting in high default and interest rates, and possibly market collapse. If they commit themselves 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, the borrowers 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. Information sharing arrangements are often created spontaneously by groups of lenders or individual entrepreneurs, in the form of credit bureaus or of rating agencies. The design of a Public Credit Registry (PCR) cannot disregard how much information sharing the private sector is already exchanging spontaneously (Padilla and Pagano, 1997). Clearly, the case for the introduction of a PCR is comparatively stronger in countries where private information sharing arrangements among lenders do not exist, or are primitive and limited in coverage and scope. Empirically the probability that a public credit reference is introduced is lower in countries with pre-existing private information-sharing arrangements. Private and public arrangements are substitutes in this area.

Kithinji (2010) studied the relationship between the credit risk management and profitability of commercial banks in Kenya. She identified credit risk management policies for commercial banks as conservative, stringent, lenient and customized and globally standardized credit risk management policies. Data on the amount of credit, level of non-performing loans and profits were collected for the period 2004 to 2008. Amount of credit was measured by loan and advances to customers divided by total assets, nonperforming loans was measured using nonperforming loans/ total loans, and profits were measured using ROTA (Return on Total assets). The trend of level of credit, nonperforming loans and profits were established during the period 2004 to 2008. Her findings reveal that the level of credit was high in the early years of the implementation of Basle II but decreased significantly in 2007 and 2008, probably when the Basle II was implemented by commercial banks. Notably, the level of nonperforming loans given by non-performing loans to total loans decreased during the period 2004 to 2008. The requirement by the Basle II might have enabled commercial banks to control their level

of nonperforming loans thus reducing banks credit risk. Thus on average the profits of the banking industry increased during the period 2004 to 2008. However profitability of the commercial banks fluctuated during the period but on average increased marginally during the period 2004 to 2008. The profits were generally low during the period of study. The amount of credit extended to customers was relatively high but assumed a downward trend during the period. Whereas the level of credit and profits were relatively low and stable, the amount of credit was high and relatively volatile.

Mumi (2011) studied the impact of credit referencing on financial performance of financial institutions in Kenya. He used credit referencing management practice, credit derivatives and portfolio credit risk management to analyze the changes in return on asset (ROA) of commercial banks in Kenya. He found that credit referencing had a positive impact on financial performance of commercial banks and recommended that bank manager embrace credit information system.

2.3.2 Cost of Lending and Bank Performance

The current level of interest rates is a combination of costs like information search costs and risk premium. With good credit track records, the risk premiums and search costs imposed on customers will ideally shrink leading to a reduction in interest rates (Jappelli & Pagano, 2006). When information is shared by an information exchange institution, such as credit bureaus the higher competition drives down interest rates (Brown, Jappelli, & Pagano, 2006).

In a theoretical model of information sharing, Miller, (2003) show that exchange of information on borrower type reduces average interest rates. In a related paper Powell, (2004) show that information sharing among borrowers would lead to lower interest rates. Information-sharing can lower average interest rates in several ways. These dynamics have been borne out both theoretically and empirically. First, without information on borrowers' risk profiles, a lender will mistake good risks for bad, and vice versa. The portfolio, therefore, will consist of more risky loans and, over time, as interest rates adjust to reflect loan performance, higher rates. Second, higher rates create incentives to engage in riskier projects, as lower-risk projects will not yield the return to

compensate for the costs of the loan. Lin et al., (2012) shows that risky projects come to account for a larger share of the portfolio, thereby driving up the average rate. When information is shared, the ability to screen out riskier borrowers improves the portfolio's performance and allows lenders to offer lower rates to less-risky borrowers who would not have borrowed otherwise.

2.3.3 Non-Performing Loans and Bank Performance

The high level of non-performing loans in the banking industry has been a hindrance to economic stability. According to CBK (2009), the stock of NPLs expanded by 7.8% to Ksh 64.9 billion by March 31st, 2009 from Ksh 58.3 billion in 2008. In the year 2006, the NPLS were Kshs. 56.4 billion from Kshs. 68.6 billion in 2005. (Bank Supervision Annual Report 2006) In 2003 and 2004, the average non-performing loan to total loans for the industry was 25% and 24% respectively (Market Intelligence 2004). NPLs in Kenya stood at Kshs. 107.4 billion at the end of 2001. This represented 38% of total loan of Kshs. 281.7 billion in the banking sector. Kusa & okoth, (2013). When loans become non-performing, banks liquidity and its earnings are adversely affected.

Overall default decreases marginally after credit bureau introduction (Jappelli & Pagano, 2006). (Barth, Lin, Lin, & Song, 2009) 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, & 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.

Moral hazard implies that information sharing should reduce default rates and interest rates and increase lending, either because credit bureaus foster competition by reducing informational rents (Giannetti, Jentzsch, & Spagnolo, 2010) or because they discipline borrowers (Giannetti, Jentzsch, & Spagnolo, 2010). In extreme cases, information exchange may make lending feasible in markets where no credit would be extended otherwise.

Jappelli & Pagano, (2006) point out that the disciplinary effect of credit bureaus arises only from the exchange of black information. Information about past defaults generates fear of social stigma. Sharing white information, i.e. data on borrowers' characteristics, while attenuating adverse selection effects, may actually reduce the disciplinary effect of information sharing. Therefore, the comparative benefit of sharing black and white information depends on the relative importance of moral hazard and adverse selection problems in the market.

2.3.4 Volume of Lending and Credit Information Sharing

If banks exchange information about their client's credit worthiness, they can assess also the quality of non-local credit seekers and lend to them as safely as they do with local clients. When banks exchange information about borrowers' types, the increase in lending to safe borrowers increases the volume of lending (Jappelli & Pagano, 2002).

Empirically Houston et al., (2010) find that credit information sharing is associated with higher lending, measured by private credit to GNP ratio and lower defaults.

Empirical evidence has provided plenty of evidence supporting the claim that CIS institutions have a positive effect on lending to the private sector. For instance, Jappelli & Pagano, (2006) show that strong credit-sharing institutions are positively related to the size of the credit market. Other empirical studies, including Miller, (2003) and Waweru & Kalani, (2009) have shown that credit is more abundant when borrowers and lenders benefit from credit-sharing institutions.

Brown & Zehnder, (2007) find that credit sharing between lenders is associated with increased and cheaper credit in transition countries in Eastern Europe. (Djankov, McLiesh, & Shleifer, 2007) show that such institutions are associated with higher ratios of private credit to gross domestic product. Berger & Frame, (2006) demonstrate how such institutions increased the quantity of small business loans in the United States and more importantly, served to expand credit to riskier marginal borrowers.

2.4 Chapter Summary

This chapter covered literature on information sharing and loan performance. It first started by reviewing the theories on which the study will be built including the information asymmetry theory which argues that not all the stakeholders have the same information about the market which may lead to different banks charging different interest rates and still gets customers. The study will also look at portfolio theory which looks at both risk and return. It will further review the theory of financial intermediation which suggests that one key function of relationship banking is to overcome information asymmetries between the lender and the borrower.

There is also a review of empirical studies: for instance, Jappelli and Pagano (2002) show that strong credit-sharing institutions are positively related to the size of the credit market. Other empirical studies, including Love and Mylenko (2003) and Galindo and Miller (2001) and have shown that credit is more abundant when borrowers and lenders benefit from credit-sharing institutions. Brown, Jappelli and Pagano (2002) find that credit sharing between lenders is associated with increased and cheaper credit in transition countries in Eastern Europe. Doblas-Madrid and Minetti (2010) find that if lenders enter credit information sharing institution, their borrowers improve their repayment performance – delinquent payments on leases and loans decrease. 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. Miller (2003) presents a comprehensive study of credit reporting systems in nearly 80 countries around the world. She discusses credit registries in both public and private credit sectors, investigates the view of credit reporting by borrowers and derives international trends in development of credit registries. Kithinji (2010) studied the relationship between the credit risk management and profitability of commercial banks in Kenya. She identified credit risk management policies for commercial banks as conservative, stringent, lenient customized and globally standardized credit risk management policies. The literature suggests a strapping association between NPLs and several factors. These are annual growth in *GDP*, credit growth, real interest rates, the annual inflation rate, real effective

exchange rate, annual unemployment rate, broad money supply (*M2*), GDP per capita, maturity, bank size, credit orientation, credit terms, management inefficiency and credit

Financial institutions are unable to judge whether the use of information from credit reference reporting bureaus enables them to determine the quality of the clients. The study therefore seeks to assess the quality of clients that had been advanced loans based on information from credit reporting bureaus. Additionally, seeks to determine the defaulting rate for Banks since the emergence of credit reference reporting bureaus and also to establish the prevalence level of credit sharing information amongst the financial institutions.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the scope of methodological procedures that were used in the study, the kind of data needed to answer the research questions and the details of how this was achieved in practice. The main aspects covered include research design, target population, sample design, data collection methods, instruments, and procedures that were used for data collection as well as data analysis and presentation and ethical issues.

3.2 Research Design

The study employed descriptive as well as correlation research designs. Descriptive research involves use of numbers, tables, charts, and graphs to describe, organize, summarize, and present raw data (Glass & Hopkins, 1984).

AECT (Association for Educational Communications and Technology) ,2001 state that descriptive studies report summary data such as measures of central tendency including the mean, median, mode, deviance from the mean, variation, percentage, and correlation between variables. The combination of its characteristic summary and correlation statistics, along with its focus on specific types of research questions, methods, and outcomes is what distinguishes descriptive research from other research types. A descriptive study can therefore help establish associations between variables. The design was therefore preferred because it allowed for collection of quantitative data from a large sample from which data analysis was carried out to derive percentages, central tendencies, mean, variations and relationships (Churchill and Iacobucci, 2002).

The researcher used time series empirical data on the variables to examine the relationship between credit information sharing and loan performance by establishing correlation coefficients between the credit reports requested by the commercial banks and loan performance as measured by the level of non-performing loans.

3.3 Target Population

The population of the study comprised of all the 43 licensed commercial banks in Kenya (Appendix 3) and the two credit reference bureaus licensed as at 31st December 2011. This was to ensure full representation of the banking industry. The population study included the Central Bank of Kenya, as the regulatory authority.

3.4 Sampling and Sampling Procedures

This study was conducted through a census survey and the population consisted the 42 banking institutions in Kenya excluding Charter House Bank Ltd for being under statutory management, which are using credit information sharing mechanisms (See Appendix 3).

3.5 Data Collection

Secondary data on Total Loans, NPL and Commercial bank Lending rate was obtained from the Bank Supervision Annual Report and Audited accounts submitted to CBK. The numbers of credit reports requested by the commercial banks in Kenya were obtained from the two credit reference bureaus licensed by the central Bank of Kenya as at 31st December 2011. The sources were chosen because of credibility as the data on loan default and credit information requests have been verified by the central bank's on-site and off-site inspections. The study period covered 2008 – 2013 (May). This period was chosen because the credit information sharing was introduced in 2008. Secondary data was useful in providing collaborative information on the problem of the study.

3.6 Data Analysis

The study used both qualitative and quantitative data. Qualitative data was analyzed using interpretive approach which includes sorting and coding raw data and use of Statistical Package for Social Sciences (SPSS). Quantitative data was analysed using regression analysis as shown in the multiple regression model below as used by Irum, Rehana and Muhammad (2012) but adjusted to include credit information sharing with other variables remaining the same.

$$Y = \alpha + \beta_0 X_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where;

Y = Loan Performance (Default Rate) computed as $\frac{\textit{Total Non-performing Loans}}{\textit{Total Loans and Advances}}$

β_0, β_3 = Coefficients of independent variables

X_0 = Aggregate number of credit reports requested by commercial banks in Kenya

X_1 = Aggregate number of credit reports requested by customers

X_2 = Aggregate number of customer inquiries due to adverse actions by financial institutions

X_3 = Commercial banks' monthly weighted average lending rate

α = Constant parameter/Intercept

ε = Error term

The linear regression equation was in the form $Y = a + \beta_1 X_1$

Where;

Y = Volume of Lending

X_1 = Loan Performance (Default Rate) computed as $\frac{\textit{Total Non-performing Loans}}{\textit{Total Loans and Advances}}$

β_1 is the coefficient while a is the constant term.

The '**a priori** expectation' in the model was that the credit information sharing was expected to have a negative relationship on loan performance as measured by NPLs. The mathematical expression represented as; $\beta_0 < 0$ implying that a unit increase in the credit independent variable (X_0) will lead to decrease in NTL/TL by a unit.

To test for the strength of the model and the relationship between credit information sharing on loan performance in commercial banks in Kenya, the researcher conducted an Analysis of Variance (ANOVA). On extracting the ANOVA table, the researcher looked at the significance value. The study was tested at 95% confidence level and 5% significant levels.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter presents the results and findings of the study based on the research objectives. The results are presented in the form of summary tables. Regression and correlations analysis are used to answer the research objective.

4.2 Data Presentation

The regression analysis was conducted using measures of loan performance and control variables. Test of significance was carried out for all variables studied using t-test at 95% level of significance. From the observation any p-value that is less 0.1 was deemed to have significant relationship with the dependent variable, else the relationship was considered insignificant. The adjusted R-square was used to measure the degree of variability of the dependent variable due to the changes in the independent variables. This is supported by the table 1 below. It is worth noting that even though credit referencing regulations were first launched in the year 2008 sharing of information on loan defaulters via credit reference bureaus started in August 2010.

Table 1- Model Summary

Model Summary^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.798 ^a	.637	.625	105.19245
a. Predictors: (Constant), lending rate				
b. Dependent Variable: Total_Loans__Advances_in_Billions				

Table 2 (Coefficients-Multiple Regression) and Table 3 (Descriptive Variables) (captioned in Appendix 1 and 3 respectively) presents the descriptive statistics of the data series. From the tables, all series show features of non-normality which is common in financial time series data. All the series have a coefficient of kurtosis of less than 3 against the standard value of 3 for a normal distribution and a non-zero coefficient of excess kurtosis. The Jarque-Bera statistic is also significant for all the data series and

therefore the time series data can be concluded to have a non-normal distribution. Jarque-Bera statistic tests whether the coefficient of skewness and the coefficient of kurtosis are jointly zero and that Jarque-Bera would not be significant for a normal distribution

4.3 Quantitative Analysis and Relationship between Variables

The study used two methods for quantitative analysis. First correlation was used to measure the degree of association between variables under consideration. Therefore Pearson and Spearman's correlation were calculated for all variables. Secondly, regression analysis was similarly used.

4.3.1 Pearson's Correlations Coefficient

Table 4 below shows the Pearson's correlation coefficient generated from the data. Pearson's correlation analysis is used to investigate the relationship between variables in the study.

Table 4: Pearson Correlation Coefficient

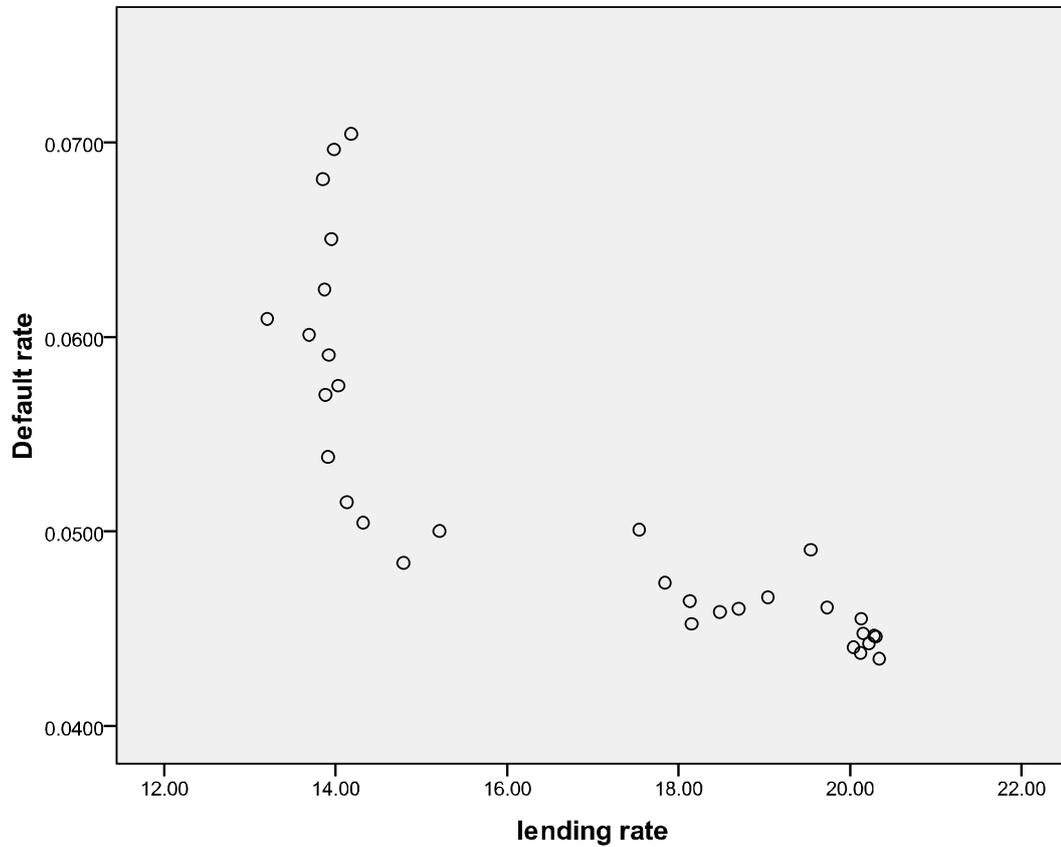
	Default rate	lending rate	Credit reports requested by banks	Credit reports requested by customers	No. of Customer Inquiries due to adverse actions by financial Institutions
Default rate	1.000	-.828	-.589	-.462	-.646
lending rate	-.828	1.000	.201	.393	.392
Credit reports requested by banks	-.589	.201	1.000	.516	.725
Credit reports requested by customers	-.462	.393	.516	1.000	.687
No. of Customer Inquiries due to adverse actions by financial Institutions	-.646	.392	.725	.687	1.000

The results show that there is a negative relationship between the number of credit reports requested by commercial bank and loan default rate. This is because credit referencing reduces information asymmetry hence better decision making. Therefore, credit referencing will deter advance of loan facility to an applicant with negative credit history hence will help in reducing loan defaults as credit will only be disbursed to applicants

with positive credit history. This finding is consistent with Pagano (2000) and Mwangi and Sichei (2009).

Loan performance as measured by loan default rate is negatively related to lending rate showing that an increase in bank lending rate will result in lower default rate. This may be attributed to stringent credit appraisal during high interest rate regimes. It was further observed that total loan and advances is negatively related to loan default rate. This is in tandem with Ndungu (2002), Brown (2007) and Mwangi and Sichei (2009). The objective of credit information sharing was to enable borrowers with no collateral to use their credit history in accessing credits from lenders. Therefore the result show that credit information sharing has added value in enabling increased access to financial services and decreased loan default rate.

Graph 1 (Scatter plot) – Lending Rate vs. Default Rate



When the lending rate is high the prospective borrowers tend to avoid going for loans till the rate comes down. Thus it was established that the variable lending rate is of significance in relation to access to credit as shown in ANOVA Table 4 below.

Table 5 – ANOVA Table

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	582144.295	1	582144.295	52.609	.000 ^a
	Residual	331963.525	30	11065.451		
	Total	914107.820	31			

a) Predictors: (Constant), lending rate

b) Dependent Variable: Total Loans Advances in Billions

4.3.2 Regression Analysis

The determinants of loan performance as measured by loan default rate were investigated. From table 6 below the established multiple linear regression equation becomes:

$$Y = 0.110 - 2.408 \times 10^{-7} X_0 + 1.749 \times 10^{-6} X_1 - 1.029 \times 10^{-5} X_2 - 0.002 X_3$$

Table 6: Model Summary (Multiple Linear Regression)

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	
1	.887 ^a	53.166	4	27	.000	1.732
a. Predictors: (Constant), No. of Customer Inquiries due to adverse actions by financial Institutions, lending rate, Credit reports requested by customers, Credit reports requested by banks						
b. Dependent Variable: Default rate						

Table 7: Result of General Least Square

Dependent Variable: Loan Performance (Default Rate)

Coefficients ^a									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.110	.005		20.475	.000			
	lending rate	-.002	.000	-.740	-10.260	.000	-.828	-.892	-.663
	Credit reports requested by banks	-2.408E-7	.000	-.392	-4.131	.000	-.589	-.622	-.267
	Credit reports requested by customers	1.749E-6	.000	.152	1.673	.106	-.462	.306	.108
	No. of Customer Inquiries due to adverse actions by financial Institutions	-1.029E-5	.000	-.175	-1.542	.135	-.646	-.284	-.100
a. Dependent Variable: Default rate									

The coefficients of the intercept and independent variables all have p-values less than 0.1 hence significant. The results show that the dependent variable is negatively related to all independent variables as already depicted by the analysis of correlation coefficient.

The Constant in table 7 above is a constant representing where the regression line intercepts the y-axis. It represents the loan default rate when all other variable are at zero.

Table 8- Coefficients (Linear Model)

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2129.629	83.213		25.593	.000
	Default rate	-18557.847	1582.037	-.906	-11.730	.000
a. Dependent Variable: Total_Loans__Advances_in_Billions						

The Linear Model becomes $Y = -.906 - 18557.85X_1$

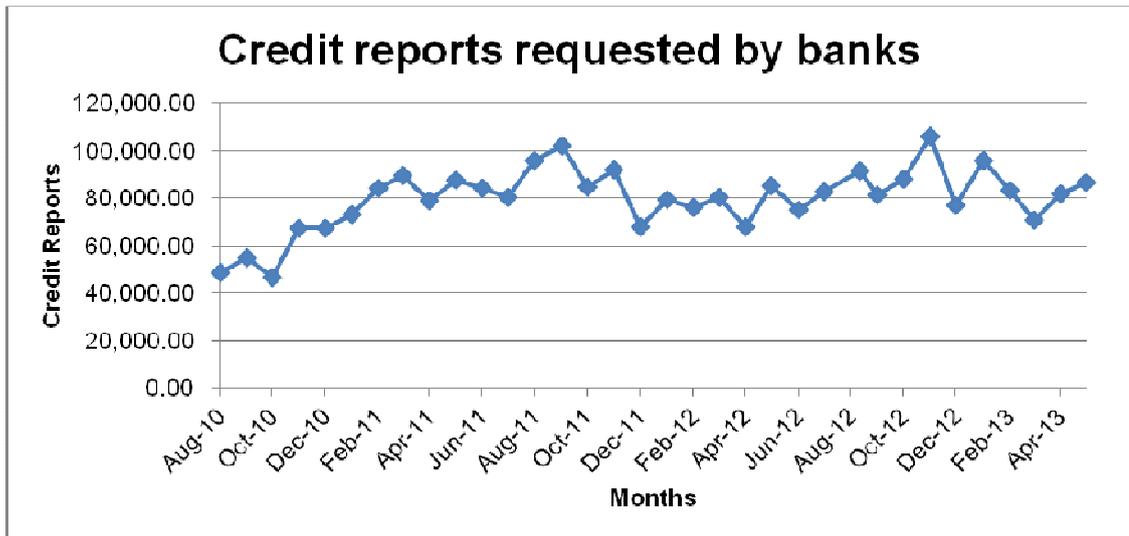
4.4 Credit Reports Requests and Loan Default Rate

The trend in credit report requests by commercial banks in Kenya and credit reports requested by customers due to an adverse action by banks are graphically illustrated below. Graph 4 shows Loan default rate has drastically reduced from 10.4% in January 2008 to 5.0% in May 2013. The decline is attributed to credit information sharing mechanism launched in 2008. Therefore CIS has helped reduce information asymmetry leading to accurate analysis of borrowers' ability and willingness to the loan. The results also show that existing borrowers honor their loan repayment obligations.

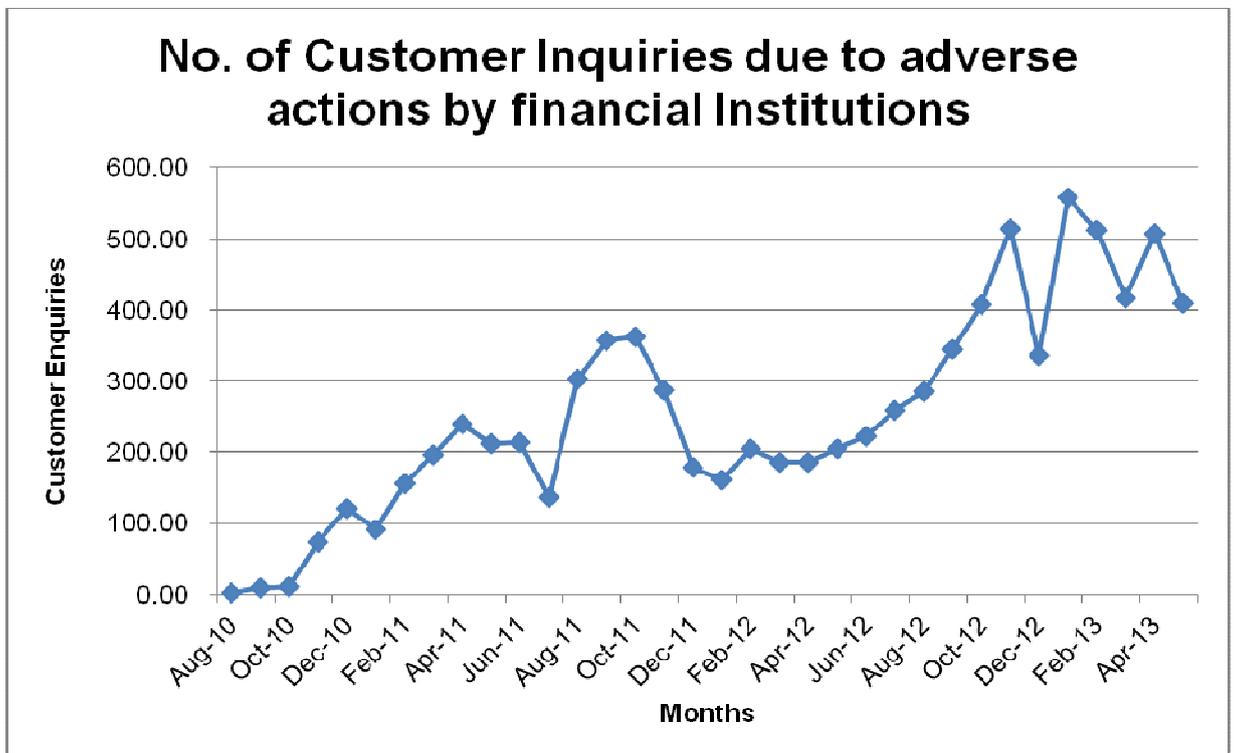
Additionally, graph 3 below show those borrowers that have defaulted with a particular lender and are again looking for alternative credit sources this is in tandem with Akerlof (1970). The graph illustrates adverse action by the bank which is a decision by the bank not to advance loans to a new applicant as result of the applicants' existing non-performing loan with other bank(s). Banks can now obtain such information from credit reference bureaus. However, it was noted that some of the loan defaulters were not aware

of the existence of credit information sharing framework and hence were making inquiries from the credit reference bureaus due to an adverse action by the banks.

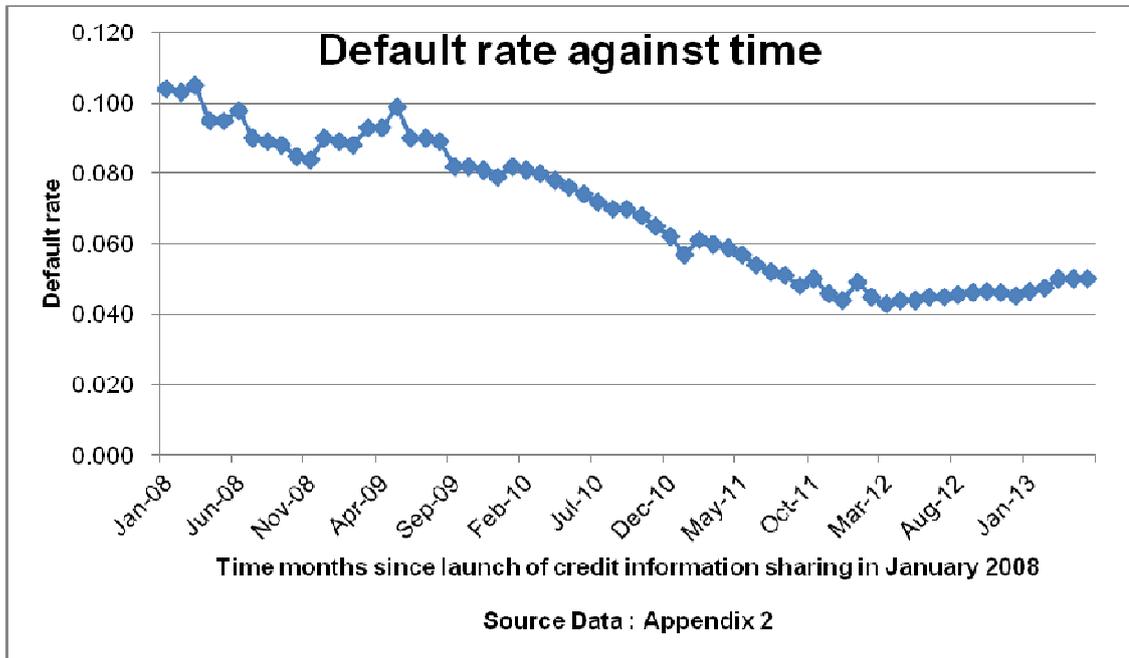
Graph 2: Credit Report Requests – Banks



Graph 3: Customer Inquiries Due to Adverse Actions by Institutions



Graph 4: Default Rate against Time (months) since launching of credit information sharing



4.5 Discussion of Findings

Credit information sharing is one of the important factors considered by managers of commercial banks, the regulator and the government to improve credit risk management practice and increase access to finance. Therefore banks consider credit referencing very instrumental in credit appraisal process especially for new clients. Credit information reduces adverse selection and moral hazard problem by reducing information asymmetry. The findings were that loan performance as measured by loan default rate is negatively related to credit information sharing, lending rate and total loans. The negative relationship between default rate and total loans is in tandem with Ndungu (2002), Brown (2007) and Mwangi and Sichei (2009) findings and government objective of launching credit referencing while the negative relationship between default rate and credit information is consistent with Pagano (2000) and Mwangi and Sichei (2009).

Commercial banks average lending rate has been decreasing from 20.04 percent in January 2012 to 17.45 percent in May 2013, this has led to increase in total loans and advances over the same period from Kshs. 1,206.60 billion in January 2012 to Kshs.

1,442.90 in May 2013. These figures indicate that whenever the Central of Bank of Kenya reduces the commercial banks average lending rate, commercial banks as well reduce the rates to attract borrowers to acquire loans at a lower rate. However, there may exist information asymmetry between the lenders (commercial banks) and the borrowers (customers requesting for loans) about the credit history of these borrowers leading to adverse selection on the part of the loan applicants hence the increase in NPLs from Kshs. 53.70 billion in March 2012 to Kshs. 80.30 billion in May 2013 (Appendix 4). On this note, Credit Information sharing is of great significance to enable the lenders to have better loan performance.

The credit reports for the commercial banks in Kenya are not the result of any analytical exercise to evaluate the potential downside loss, but rather a subjective evaluation of management's tolerance, based upon rather imprecise recollections of previous downturns. Thus financial firms should have portfolio managers to watch over the loan portfolio's degree of concentration and exposure to both types of risk concentration. To be meaningful, however, this exposure must be bank wide and include all related affiliates. For large financial institutions, a key relationship manager must be appointed to assure that overall bank exposure to a particular client is captured and monitored.

The study concludes that credit information sharing has a negative correlation with loan default rate. Thus suggesting credit information sharing will lead to decrease in loan defaults. All independent variables had a significant relationship with the Loan performance. Therefore, information-sharing expands access to credit overall and disproportionately expands access among the underserved. Information-sharing improves loan performance by reducing delinquency rates for any given target. Both are achieved by accurately identifying good credit risks that otherwise would have been misidentified as bad risks and, therefore, would have been denied credit. At the same time, bad risks, given credit because they were thought to be good risks, now have credit denied to them or are no longer subsidized by lower-risk individuals. In the aggregate, lending is increased, leading to greater economic growth, rising productivity and greater capital stocks.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Data on aggregate number of credit reports requested, monthly weighted average lending interest rate and total loans advanced by forty two commercial banks were collected for the period January 2008 to May 2013. The population of the study comprised of 43 commercial banks and two CRBs. The research involved the use of regression analysis of loan performance as measured by default rate as the dependent variable while the number of credit reports requested by commercial banks, aggregate number of credit reports requested by customers, aggregate number of customer inquiries due to adverse actions by financial institutions and commercial banks' monthly weighted average lending rates were the independent variables. The t-statistics and R-squared were used to determine the magnitude of relationship between the dependent variable and independent variables. In general, the results of general least squares method indicates that credit information sharing affects loan performance and if banks undertakes credit referencing during credit appraisal process then loan default rate will decrease.

The study concludes that credit information sharing has a negative correlation with loan default rate. Thus suggesting credit information sharing will lead to decrease in loan defaults. All independent variables had a significant relationship with the Loan performance. Therefore, information-sharing expands access to credit overall and disproportionately expands access among the underserved. Information-sharing improves loan performance by reducing delinquency rates for any given target. Both are achieved by accurately identifying good credit risks that otherwise would have been misidentified as bad risks and, therefore, would have been denied credit. At the same time, bad risks, given credit because they were thought to be good risks, now have credit denied to them or are no longer subsidized by lower-risk individuals. In the aggregate, lending is increased, leading to greater economic growth, rising productivity and greater capital stocks. Average interest rates decrease.

5.2 Conclusions

The study found negative correlation between dependent variable and independent variable. The result indicate that managers can create value for their principles by making use of credit referencing during credit appraisal process to screen credit applicants and reduce adverse selection problem. It is therefore recommended that banks should share the credit reports of their respective borrowers in order to improve on their performance. Also borrowers should be updating their payment records with their client banks in order for such reports to be used for their advantage through getting loans with low interest rate and little or no collaterals.

As noted Pagano and Jappelli (1993) by exchanging information about their customers, banks can improve their knowledge of applicants' characteristics, past behavior and current debt exposure. In principle, this reduction of informational asymmetries can reduce adverse selection problems in lending, as well as change borrowers' incentives to repay, both directly and by changing the competitiveness of the credit market. It can also reduce each bank's uncertainty about the total exposure of the borrower, in the context of multiple bank lending.

Credit information sharing will facilitate the building of information capital that will guide the pricing of loans by financial institutions. Banks will at the appraisal stage be able to price loans with vastly enhanced information set as compared to the current situation. Customers, armed with their credit histories, will also be empowered to negotiate better terms for credit with banks. This is definitely a win-win situation that will catalyze growth of credit for investment and wealth creation

Therefore, to maintain useful representative data in the Credit Bureau it is important to constantly encourage further data sharing between users of the services. The most important stage in the development of the database is the persuasion of lenders to share not just accounts with poor payment history (negative data) but also those with good payment history (positive data).

5.3 Policy Recommendations

The study recommends that commercial banks and other lenders should adopt adequate credit information sharing systems. Through exchanging information about their customers financial lenders can improve their knowledge of the applicants' characteristics, past behavior and current debt exposure. The reduction of information asymmetries reduces adverse selection problem. It further motivates borrowers to honor their obligation and further enhances competitiveness of credit markets.

The researcher recommends full file reporting by participating institutions. Full file reporting, that is, sharing of both negative and positive information on customers is important as it enables risk based pricing through credit scoring. It is important to have full file reporting to facilitate credit scoring mechanism and enhance the information capital. Further, full file comprehensive credit reporting systems are more successful at expanding access to credit, improving loan performance and preventing over indebtedness. The researcher therefore recommends that credit providers to consider sharing full file information, in order to enjoy the full benefits of the CIS mechanism. There is also a need to ensure that both lenders and borrowers are sufficiently sensitized on the merits of a robust credit information sharing mechanism and are able to use it to their advantage. This calls for well thought out awareness campaigns and capacity building programs. It is particularly important that lenders develop skills that enable them apply credit management tools as effectively as possible so that low-risk customers are rewarded appropriately. The researcher recommends that credit managers undertake credit referencing of loans applicants during client appraisal process. Credit reports may help credit manager obtain information initially concealed by the loan applicant and can therefore help reduce information asymmetry. The success of credit information hinges on a robust legal framework that supports a full-file comprehensive data sharing mechanism. The researcher therefore recommends that CBK enforce laws and regulations on reporting loan defaulters. The errant commercial banks that fail to report loan defaulters to credit reference bureau should be sanctioned and punished. This will ensure that all loan defaulters are reported to a central place and will be on common database.

The researcher established that current system of credit information sharing is limited to commercial banks. If this is allowed to continue, various credit providers may create “silo” databases, often referred to as “segmented” information sharing. Credit reports generated by such systems give an incomplete and often misleading picture.

Comprehensive systems, by contrast, allow a more complete credit profile of a consumer to be drawn. For small businesses, it also includes trade credit data and leasing arrangements. These non-financial services, such as utility and telephone services, are usually more common than are financial payment data, particularly in less developed markets, where, for example, the number of cell phone users may far outstrip the number of credit card users. The use of non-financial data in credit files offers the promise of a diversified information capital that will facilitate extension of reasonably-priced credit to those who have not previously accessed formal credit. Policy makers should therefore develop laws and regulations for “Comprehensive” systems of reporting of defaulters by various parties such as beneficiaries of higher education loans, defaulters of electricity bill, rent and land rate defaulters and defaulters on sacco’s and micro-finance loans.

5.4 Limitations of the Study

The credit referencing in Kenya is relatively young and hence people and lenders may not have fully embraced the use of credit information sharing system. Even though the credit referencing regulations were first launched in 2008, the names of loan defaulters were first submitted to CRBs in August 2010 and credit referencing of loan applicants started the same time. Therefore, this shortened the regression data period contrary to the one proposed in research methodology. Credit information sharing is currently limited to commercial banks and therefore the findings of this study may not benefit other lenders such as micro-finance institutions.

Credit reporting is currently limited to negative information only. The regulations only provide for mandatory reporting of negative information such as loan defaults, bouncing cheques and bankruptcy. Therefore the findings of this study have been limited to the effect of negative information sharing as opposed to full file reporting. The study reflects

Kenyan commercial banks perspective and only impact of sharing negative credit information has been discussed in the study.

5.5 Suggestions for Future Research

The researcher recommends the following areas for future research. This study focused on the relationship between credit information sharing and loan performance. However, the study period of five years since the launching of credit information sharing regulations in 2008 may not be long enough. Therefore, the researcher recommends that a similar study be repeated after five years.

This study used aggregate industry figures, the researcher therefore recommends that future researchers use firm (bank) specific figures to investigate the relationship of credit information sharing and loan performance and assess whether the results will be different from the finding of this study.

This study was limited to use of only four variables namely lending interest rate and credit information sharing variables (i.e. credit report requests by banks, customers and customer inquiries due adverse actions by customers by banks) as factors that affect non-performing loans. Therefore, the researcher recommends that future researchers consider adding other variables such as GDP, Inflation and Management expertise to the model to assess their joint impact on non-performing loans.

The researcher also recommends that future researcher investigate the impact of credit information sharing on lending interest rate. The future researcher can also investigate the impact of credit information on customer loyalty. Further, the researcher recommends that futures researchers investigate the effect of credit information sharing on financial deepening and access to financial services by the rural populace in Kenya.

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APPENDICES

APPENDIX 1: TABLE 2 - COEFFICIENTS (MULTIPLE REGRESSION)

Coefficients^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.094	.005		17.864	.000	.083	.105
	lending rate	-.002	.000	-.828	-8.095	.000	-.003	-.002
2	(Constant)	.111	.004		25.829	.000	.102	.120
	lending rate	-.002	.000	-.740	10.930	.000	-.003	-.002
	Credit reports requested by banks	-2.710E-7	.000	-.441	-6.516	.000	.000	.000
a. Dependent Variable: Default rate								

APPENDIX 2: TABLE 3 – DESCRIPTIVE VARIABLES

	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Default rate	.0435	.0704	.051947	.0014821	.0083842	.000	.960	.414	-.340	.809
Credit reports requested by banks	46780.00	1.06E5	7.9583E4	2.41145E3	13641.23814	1.861E8	-.600	.414	.620	.809
Credit reports requested by customers	37.00	3315.00	6.7794E2	1.28467E2	726.71661	5.281E5	2.770	.414	8.149	.809
No. of Customer Inquiries due to adverse actions by financial Institutions	3.00	558.00	2.4209E2	25.25241	142.84920	2.041E4	.413	.414	-.121	.809

APPENDIX 3: LICENSED COMMERCIAL BANKS

1. ABC Bank (Kenya)
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank
6. Brighton Kalekye Bank
7. CFC Stanbic Bank
8. Chase Bank (Kenya)
9. Citibank
10. Commercial Bank of Africa
11. Consolidated Bank of Kenya
12. Cooperative Bank of Kenya
13. Credit Bank
14. Development Bank of Kenya
15. Diamond Trust Bank
16. Dubai Bank Kenya
17. Ecobank
18. Equatorial Commercial Bank
19. Equity Bank
20. Family Bank
21. Fidelity Commercial Bank Limited
22. Fina Bank
23. First Community Bank
24. Giro Commercial Bank
25. Guardian Bank
26. Gulf African Bank
27. Habib Bank
28. Habib Bank AG Zurich
29. I&M Bank

30. Imperial Bank Kenya
31. Jamii Bora Bank
32. Kenya Commercial Bank
33. K-Rep Bank
34. Middle East Bank Kenya
35. National Bank of Kenya
36. NIC Bank
37. Oriental Commercial Bank
38. Paramount Universal Bank
39. Prime Bank (Kenya)
40. Standard Chartered Kenya
41. Trans National Bank Kenya
42. United Bank for Africa^[2]
43. Victoria Commercial Bank

Source: Central Bank of Kenya, (2013)

APPENDIX 4: DEFAULT RATE, TOTAL LOANS, NPL AND LENDING RATE

Year	Months	Default Rate	Total Loans & Advances in Billions	NPLs in Billions	Lending Rate %
2008	Jan-08	0.104	551.80	57.30	13.78
	Feb-08	0.103	557.00	57.30	13.84
	Mar-08	0.105	554.20	58.30	14.06
	Apr-08	0.095	616.00	58.30	13.91
	May-08	0.095	610.70	58.30	14.01
	Jun-08	0.098	597.70	58.30	14.06
	Jul-08	0.090	624.80	56.30	13.90
	Aug-08	0.089	635.90	56.30	13.66
	Sep-08	0.088	650.10	57.10	13.66
	Oct-08	0.085	679.00	57.40	14.12
	Nov-08	0.084	679.80	57.40	14.32
	Dec-08	0.090	685.90	61.50	14.87
2009	Jan-09	0.089	690.70	61.50	14.78
	Feb-09	0.088	695.90	61.50	14.67
	Mar-09	0.093	694.40	64.90	14.87
	Apr-09	0.093	698.20	65.00	14.71
	May-09	0.099	707.50	69.90	14.85
	Jun-09	0.090	712.40	64.20	15.09
	Jul-09	0.090	721.00	64.80	14.79
	Aug-09	0.089	729.70	65.20	14.76
	Sep-09	0.082	736.00	60.60	14.74
	Oct-09	0.082	755.00	61.60	14.78
	Nov-09	0.081	757.50	61.50	14.85
	Dec-09	0.079	771.70	61.30	14.76
2010	Jan-10	0.082	774.50	63.40	14.98
	Feb-10	0.081	783.90	63.20	14.98
	Mar-10	0.080	789.50	63.00	14.96
	Apr-10	0.078	799.50	62.00	14.58
	May-10	0.076	816.20	62.30	14.44
	Jun-10	0.074	828.90	61.50	14.39
	Jul-10	0.072	849.00	60.90	14.29
	Aug-10	0.070	864.60	60.90	14.18
	Sep-10	0.070	878.80	61.20	13.98
	Oct-10	0.068	900.00	61.30	13.85
	Nov-10	0.065	911.80	59.30	13.95
	Dec-10	0.062	925.60	57.80	13.87
2011	Jan-11	0.057	944.40	54.30	14.03
	Feb-11	0.061	969.90	59.10	13.20
	Mar-11	0.060	994.80	59.80	13.69

	Apr-11	0.059	1,015.70	60.00	13.92
	May-11	0.057	1,046.90	59.70	13.88
	Jun-11	0.054	1,083.10	58.30	13.91
	Jul-11	0.052	1,118.30	57.60	14.13
	Aug-11	0.051	1,137.80	57.40	14.32
	Sep-11	0.048	1,192.50	57.70	14.79
	Oct-11	0.050	1,213.50	60.70	15.21
	Nov-11	0.046	1,201.40	55.10	18.48
	Dec-11	0.044	1,205.50	53.10	20.04
2012	Jan-12	0.049	1,206.60	59.20	19.54
	Feb-12	0.045	1,221.00	54.50	20.28
	Mar-12	0.043	1,235.70	53.70	20.34
	Apr-12	0.044	1,261.00	55.80	20.22
	May-12	0.044	1,291.40	56.50	20.12
	Jun-12	0.045	1,289.30	57.50	20.30
	Jul-12	0.045	1,311.40	58.70	20.15
	Aug-12	0.046	1,325.00	60.30	20.13
	Sep-12	0.046	1,316.80	60.70	19.73
	Oct-12	0.047	1,340.70	62.50	19.04
	Nov-12	0.046	1,351.20	62.20	18.70
	Dec-12	0.045	1,361.30	61.60	18.15
2013	Jan-13	0.046	1,385.10	64.30	18.13
	Feb-13	0.047	1,395.70	66.10	17.84
	Mar-13	0.050	1,402.40	70.25	17.54
	Apr-13	0.050	1,420.50	74.80	17.87
	May-13	0.050	1,442.90	80.30	17.45

APPENDIX 5: NUMBER OF CREDIT REPORTS REQUESTED

1. CRB AFRICA

Month of Data Submission	Credit reports requested by banks	Month of Data Submission	Credit reports requested by customers	No. of Customer Inquiries due to adverse actions by financial Institutions
Aug-10	48,538.00	Aug-10	60.00	3.00
Sep-10	54,794.00	Sep-10	55.00	9.00
Oct-10	46,780.00	Oct-10	37.00	11.00
Nov-10	67,309.00	Nov-10	118.00	73.00
Dec-10	67,301.00	Dec-10	164.00	121.00
Jan-11	72,950.00	Jan-11	134.00	92.00
Feb-11	84,456.00	Feb-11	297.00	156.00
Mar-11	89,463.00	Mar-11	362.00	197.00
Apr-11	79,009.00	Apr-11	401.00	240.00
May-11	87,634.00	May-11	423.00	212.00
Jun-11	84,319.00	Jun-11	377.00	213.00
Jul-11	80,359.00	Jul-11	267.00	136.00
Aug-11	96,015.00	Aug-11	582.00	302.00
Sep-11	101,938.00	Sep-11	694.00	357.00
Oct-11	84,514.00	Oct-11	781.00	362.00
Nov-11	91,915.00	Nov-11	653.00	287.00
Dec-11	68,026.00	Dec-11	478.00	179.00
Jan-12	79,332.00	Jan-12	552.00	162.00
Feb-12	76,100.00	Feb-12	505.00	204.00
Mar-12	80,438.00	Mar-12	480.00	186.00
Apr-12	67,966.00	Apr-12	462.00	185.00
May-12	85,370.00	May-12	552.00	205.00
Jun-12	75,198.00	Jun-12	562.00	222.00
Jul-12	82,717.00	Jul-12	658.00	259.00
Aug-12	91,549.00	Aug-12	719.00	285.00
Sep-12	81,536.00	Sep-12	834.00	344.00
Oct-12	88,308.00	Oct-12	3,315.00	408.00
Nov-12	105,707.00	Nov-12	3,058.00	514.00
Dec-12	76,993.00	Dec-12	1,458.00	336.00
Jan-13	95,837.00	Jan-13	1,088.00	558.00
Feb-13	83,504.00	Feb-13	836.00	513.00
Mar-13	70,795.00	Mar-13	732.00	416.00
Apr-13	81,624.00	Apr-13	1,522.00	508.00
May-13	86,427.00	May-13	1,573.00	410.00
TOTAL	2,714,721.00		24,789.00	8,665.00

2. METROPOL CRB

Month of Data Submission	Credit reports requested by banks	Month of Data Submission	Credit reports requested by customers	No. of Customer Inquiries due to adverse actions by financial Institutions
Jul-11	1	Jul-11	3	1
Aug-11	523	Aug-11	8	0
Sep-11	262	Sep-11	8	1
Oct-11	162	Oct-11	27	0
Nov-11	121	Nov-11	88	0
Dec-11	50	Dec-11	24	0
Jan-12	113	Jan-12	0	0
Feb-12	168	Feb-12	0	0
Mar-12	408	Mar-12	25	5
Apr-12	609	Apr-12	20	1
May-12	939	May-12	407	4
Jun-12	1105	Jun-12	426	7
Jul-12	2058	Jul-12	423	20
Aug-12	2200	Aug-12	315	15
Sep-12	2389	Sep-12	529	11
Oct-12	1876	Oct-12	1419	3
Nov-12	5749	Nov-12	2865	32
Dec-12	6499	Dec-12	3108	122
Jan-13	6587	Jan-13	1418	11
Feb-13	9323	Feb-13	1418	32
Mar-13	8788	Mar-13	947	27
Apr-13	15994	Apr-13	898	23
May-13	26060	May-13	366	11
TOTAL	91,984.00		14,742.00	326.00