THE EFFECT OF CREDIT INFORMATION SHARING ON PROFITABILITY OF COMMERCIAL BANKS IN KENYA

BY

ANNE N. KITAO

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DECLARATION

This research project is my original work and has not been submitted to any other university or institution for any academic work.

Signature: ……………………………………….   Date: …………………

KITAO ANNE NCHOHE
D61/68749/2013

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

Signature: ……………………………………….   Date: …………………

Mr. Dan Chirchir

Lecturer
School of Business
University of Nairobi

Signature: ……………………………………….   Date: …………………

Mr. James Karanja

Lecturer
School of Business
University of Nairobi

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DEDICATION

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ABSTRACT

The banking industry as a whole has faced challenges in attaining wide-ranging information on clients' payment history for use during their credit assessment process. The aim of the information sharing is to provide information that is very accurate, latest updates and give instant information on borrowers who have potential. This ensures that it is cost efficient and easier to assess the risk and thus managing it, thus enabling reduction of the involvement of unprofitable business and instead result in improvement of client portfolio profitability of the company and also quality. The main objective of this study was to establish the effect of credit information sharing on profitability of commercial banks in Kenya. The study used a descriptive survey design in evaluating the impact of CIS on profitability of commercial banks in Kenya. All the 43 commercial banks licensed by the Central Bank formed the target population as at December 2015. The study used secondary data covering a period of 10 years from the year 2005 to 2014. To determine the relationship between the variables in the study, multiple regression analysis was used. Statistical Package for the Social Sciences (SPSS) was used to capture and analyze the data. The independent variables studied were four in number and explained 87.8% of the operating margin. This implies that these variables are very significant therefore need to be considered in any effort to boost profitability of Kenyan commercial banks. The recommendation from this study is that other institutions offering other forms of credit such as trade credit to share information with Credit Reference Bureaus to enrich the database and to give a complete overview of borrowing entities in the view of diminishing information asymmetry in the Kenyan credit market.

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 that only a borrower is in a position to know precisely if he or she has the intention and capability to make loan repayments. Therefore, the lender must deduce the borrowers' profile risk. This assessment are very important in that the borrowed funds involves a consensus between the borrower and the lender to repay at a future date, something that has a high level of consequences for the lenders, (Beck, Lin, & Ma, 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 facility for everyone's credit information, providing 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 & Varghese, 2010).

Faced with adverse credit risk challenges and numerous losses, commercial banks are currently adopting credit Information sharing to enables credit these financial institutions 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,

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2004). This therefore gives the lender the evidence and therefore the confidence that the borrower has the means and ability to repay by looking at repayment and other accounts. Whereas the structure of credit market has no effects on credit rationing, it will eventually affect the availability of credit through client-maximizing cross-subsidization. Risk is high and very costly in credit markets where the players are risk averse. In a market where there is competition, the increasing rate of cost from a higher risk is usually compensated in return by the high prices i.e (interest rate) up to the point when equilibrium will be attained, this is when the supply is equal to demand (Bercoff, Julian, & Franque, 2002).

1.1.1 Credit Information Sharing

Credit information sharing occurs when lenders make information exchange on the credit levels performed by their customers by the use of the platform of Credit Reference Bureaus. Data or information sharing 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, Lin, & Ma, 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.

First CRB was licensed in 2010 and the second CRB in 2011. The third amendment was done in 2012 and these resulted into The CRB Regulations 2013, which now mandated Banks and Microfinance Banks to share both the negative and also the positive information. Currently all the 43 Commercial Banks and 12 Microfinance Banks share information with the three licensed CRBs in the Kenyan market i.e Credit Reference Bureau Africa Limited t/a TransUnion ,Creditinfo Credit Reference Bureau Limited, , Metropol Credit Reference Bureau Limited. Given that CRB has been in operation for the last eight years, it's now possible to measure the impact of CIS on the non-performing loans of banks which impacts on the profitability of banks. 'However, the conclusions and recommendations based on the empirical results should be made with great precaution', (Mombo, 2013).

1.1.2 Profitability of Commercial Banks

Financial performance measures how good a commercial bank uses its assets as from a mode of primary nature or core mode of the business to help in generating its revenue. It can also viewed as an overall measure financial health of a firm. It also compares similar banks across the same industry over a specified period of time, Pandey (2008). Measurement of financial performance can be done using many ways, although all this measures should actually be put in account. Majority of the upcoming firms' business aim at increasing profits and this makes it necessary to get the knowledge on how bank's profitability is measured.

The key measures of financial performance include: - Net profit margin which measures profit, since it accounts for the costs including the overhead cost and also tax payments

and interest. In order to measure profitability of an organization, gross profit margin is used after deduction of direct expenses; whereas operating profit margin falls between gross measures and the net effect measures of measuring profitability net of the overheads have been deducted before interest and tax payments which is referred to as EBIT (earnings before interest and taxes).

Success of every lender is therefore determined by the extent to which the lender can effectively deal with the Information asymmetry challenge, the correct determination of the creditworthiness of the borrower in order to avoid adverse selection and being able to decipher moral hazard issues. In a bid to simplify the analytical process, the bureaus of credit facilities use a unique mathematical algorithm in order to give a score that the lenders use in assessment of the probability that a borrower will make repayments on a loan given the rate which other borrowers in the same conditions have made defaults (Kenya Bankers Association, 2012).

1.1.3 Credit Information Sharing on Profitability of Commercial Banks

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, relationship between the credit registries characteristics i.e (the age, type of data) and credit /GNP (Jappelli and Pagano, 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.

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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, it helps to reduce the rate of default and makes easy accessibility to loans; (Barron & Staten, 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). In countries with better credit information, the firms are usually not vey constrained in credit terms and they also do not rely much on funds made internally; Galindo & Miller (2001).

Gehrig and Stenbacka, (2005) posits that sharing credit information will tend to bring in instability in terms of relationships in lending , because it can fosters competition ex-post, as related banks and banks outside will bring in competition on terms that are more equal ex-post. The lenders who make use of information obtained from borrowers have a major role that the must play when it comes to advancing loans to them in the economy.

To uphold this idea, information sharing enables the lender in making decisions faster, accurately and more importantly, informed decisions in credit borrowing.

The history of credit will provide a critical contribution for credit underwriting. Additionally, it enables to have their historical credit information shared with the other lenders. This brings in competition among the lenders thus credit becomes more affordable and in the long run, economically stimulating. Credit Reference Bureaus (CRBs) help more people to have access to credit and also enables banks, other credit offering institutions and businesses reduce risks in lending and frauds (Krishnan, 2009).

1.1.4 Commercial Banks in Kenya

Commercial banks in Kenya are regulated by the Banking Act and are in continuous supervision by the Central Bank of Kenya (CBK). Commercial banks in Kenya have undertaken restructuring to mitigate against bank failure, as an aspect of financial sector reforms, as part of the government divestiture programme, to improve performance, to be more competitive, to improve bank solvency and to increase the banking sector capacity for financial intermediation (Central Bank of Kenya, 2014). Currently, losses are one of the major causes of the economic stagnation problems that Kenya is facing today (Warue, 2015).

The financial sector views each loss as an obverse mirror image of an unprofitable enterprise that is struggling financially. 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 *et al*., 2009).

Although non-performing loans have decreased, the numbers are still significant. Additionally, 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 (Chang et. al, 2014). Up to the 31st December 2014, the sector of banks is sector comprised of the Central Bank of Kenya (CBK) as the regulatory

authority, 44 banking institutions, and 7 representative offices of foreign banks. From the 44 banking institutions, 30 locally owned banks comprise 3 with public shareholding and 27 owned privately while 14 are owned by foreigners (Kenya Bankers Association, 2012).

1.2 Research Problem

The banking industry as a whole has faced challenges in attaining wide-ranging information on clients' payment history for use during their credit assessment process. Since 2008, banks in Kenya have subscribed to credit reference bureaus that provide information regarding the customers. The aim of the information sharing is to provide information that is accurate and up to date on all the potential borrower customers. This will make things easier, cost efficient in terms of assessing and managing the risk, and in the end helps to reduce the banks from being involved in unprofitable business leading to a better quality portfolio of client and profitability. Problems of losses in the banking sector and other financial institutions has been evident in the recent past at several stages of the current crisis in finance in many developing economies. Researchers and economists have confronted the need for serious insights into the factors of forces that will drive macro-economic instability. This calls for urgent need in considering new models in the economy that can be applied in the micro-economic theory of banking to the macro-economic theory of the business cycles that cannot be underestimated. 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 theory and the moral hazards in the credit market, hence

stimulating access to credit, lowering interest rates and reducing defaults, (Chakraborty & Play, 2001).

In countries that have weak company laws and creditor rights, Credit information sharing is usually very relevant for their credit market's financial performance especially the transition countries like Kenya, which in recent years has saddled with huge losses 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 linkage between access to credit and economic development 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).

Jappelli and Pagano (2006) conducted a survey in forty-three countries and concluded that lending done by banks to the privately owned sectors are larger and the rate of default is lesser in those countries that information sharing is much highly extensive and very profound in a solid manner. In this regard, the relations have had control on economic and the institutional controls of lending, e.g. growth rate, size of the country, gross domestic product, and other variables. This captures respect for laws and protection of rights for all the creditors involved.

Locally, Ocharo (2013) conducted a study to determine the effect of credit information sharing on non-performing loans in the commercial banks in the Kenyan market. The findings of the study were that the proportion of non-performing loans has declined and the number of credit reports requested by banks had increased. Bonaya (2012) conducted

a study on the effect of credit information sharing on loan performance in commercial banks in Kenya. The study found out that default rate of loans is negatively related to total loans. Koros (2015) study on the effect of credit information sharing on the credit market performance of commercial banks in Kenya. Kipyegon (2011) conducted a study on 'credit information sharing and the performance of the banking sector'. The finding of the research shows that credit information sharing and the bank performance are strongly related.

However, the research studies conducted on effects of credit information sharing on the profitability of commercial banks are few, yet, through credit information sharing lenders (commercial banks) are in a better position to make analysis on the borrower's repayment capability translating to profitability through loan interest rates. Therefore, this study seeks to establish the effect of credit information sharing on profitability of commercial banks in Kenya.

1.3 Research Objective

The main objective of the study was to establish the effect of credit information sharing on profitability of commercial banks in Kenya.

1.4 Value of the Study

The results of the study will contribute to the existing body of knowledge on credit information sharing on profitability of listed commercial banks 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. The study intended methodology on regression will be useful to researchers who might be keen on analyzing complex relationships between the dependent and many independent variables.

This study will make contribution 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 credit information sharing on profitability of listed commercial banks 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 credit information sharing and losses by commercial banks.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides reviews of literature on credit information sharing, theoretical framework, and empirical studies on credit information sharing and bank profitability. The chapter will also include empirical review and critique of existing literature.

2.2 Review of Theories

This section discusses the theories related to credit information sharing and banks profitability. The theories under discussion are the Adverse Selection Theory, the Moral Hazard Theory and the Financial Sustainability Model.

2.2.1 Adverse Selection Theory

A study by Pagano and Jappelli (1993) indicates that sharing of information leads to reduction of adverse selection by improving banking sources of information in regards to the applicants of credit. The theory of asymmetric information states 'that it could be hard to differentiate between the good borrowers from the bad borrower' (Auronen, 2003) in Richard (2011). This may lead to problems of adverse selection and also moral hazards. Adverse selection theory gives an explanation in the business markets, whereby the parties are in possession of more information with regards to specific items to be transacted. Therefore, the borrower is better positioned to make optimally make negotiations for transactions than other parties (the lender) (Auronen, 2003) Richard (2011). This implies that for a party that has less information on the similar items of transactions will definitely be in a better position when it comes to making an informed

decision on the transaction. It is also true that reduction of profitability have been significantly affected by moral hazards and adverse selection (Bester, 1994; Bofondi and Gobbi, 2003).

2.2.2 The Theory of Delegated Monitoring

This theory is very critical in the literature of banks' existence in the economy. In a broad definition, when a borrower is closely monitored by a bank, then the bank will have to collect information prior to and after the loan is disbursed to the borrower. It includes thorough screening of all the loan applications, ensuring that the borrower is creditworthy and making sure the borrower understands and abides to the terms and conditions of the lender contract. In this process, banks usually have privileged information since they have the client's records and can see the transactions in the account. For the small enterprises and medium enterprises, this is crucial to the role of banks in the system of making payments (Matthews and Thompson, 2008).

Matthews and Thompson (2008), posits that the major element in the theory of delegated monitoring is analysis of costs and benefits of monitoring. This implies that delegating monitoring will lead to new information challenges whereby parties involved in monitoring agents have information only known to them. This eventually leads to delegation costs which should be lower compared to minimum cost if not monitored and costs that are directly monitored. The Central Bank of Kenya annual report (2008), defines as "Credit information sharing 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". CIS is an advantage to banks because they are in a position to know if the borrowers have the capacity to repay loans advanced to them

commonly referred to as credit reporting. This idea of sharing information about credit report of customers was conceived after many banks were indebted by the failure of customers to repay back the loan they got from the banks. This was associated by the information asymmetry that each bank had on its customers (Central Bank of Kenya, 2015).

2.2.3 Moral Hazard Theory

In this theory, the implication is that the person borrowing is likely to default repayments, but if he is aware of the repercussions on other credit applications, they may do otherwise. The implication will be that lenders will have difficulty to assess the level of borrowers' wealth as at the dates of repayment of the debts, but not on the date the applications are done. In case lenders are not able to make assessment on the wealth of a borrower, then the temptation of default can arise. In order to prevent this, banks will increase their interest rates causing the market to break down (Alary and Goller 2001).

2.2.4 Financial Sustainability Models

The classic micro-economic theory states that sustainability in finance can only be built by employing the aspect of marginal revenue and marginal-cost (Jackson & McConnell, 1980). The process of attaining this behavior and how viable an entity can be competitive is by calculating and comparing prices. This means, when making comparison between the marginal revenues and marginal costs of the specific unit to be produced, any unit that has its marginal revenue exceeding marginal cost would be produced but any unit whose marginal cost exceeds marginal revenue should not be produced. At equilibrium, marginal revenue equals marginal cost, output maximizing aspect implying that entities

maximize profit or minimizing loss, thus production equilibrium where the marginal revenue and marginal cost are equal (Jackson & McConnell, 1980).

In an assumption that prices are determined by forces of the market which are commonly known as supply and demand forces for instance, in a case of pure competitions then entities will continue being sustainable financially through profits maximization and loss minimization. If an entity produces outputs at equilibrium, and when marginal revenue is more than minimum average variable cost i.e total variable costs like materials, labor, and power costs, shared among the units produced (Jackson & McConnell, 1980).

There is no output level where an entity is in a position to make production of output and make losses that are less than fixed costs, this is seen to be financially unfit (Jackson & McConnell, 1980). The assumption is that there is no subsidization over time to drive out short-term losses. Banks must therefore price their loan products and structure in a way that the margins will be adequate to meet members' expectations on returns and retain reasonable surpluses for growth and sustainability. The interest charged on loans must be adequate to cover overheads and generate reasonable surplus for the shareholders dividend, interest earnings and retention to build institutional capital. Similarly, the interest paid on savings and deposits should be attractive capable of enticing depositors and savers to invest in the society. Through diversified products and services, the Bank will be able to generate the much needed revenue to manage competition.

2.3 Determinants of Profitability of Commercial Banks

Cavallo and Majnoni (2001), Demirgüç-Kunt and Huizinga (1999), Davis and Zhu (2005) Toni Uhomoibhi (2008), Bennaceur (2003), Bikker and Metzemakers (2004),

Davis and Zhu (2005), Devinaga Rasiah (2010), they divide determinants of performance and profitability of commercial banks in two categories: - the internal and external factors. In regards to this study the main factor would be internal factors since CRB practices are aimed in improving internal efficiency of banks. Husni (2011) states that the determinants profitability in banks internally consists of controllable issues by commercial banks and this factors have an impact on revenue levels and the costs incurred by banks. Other studies have made classifications as financial variables and non-financial variables. The financial variables consists of factors with a direct relationship to the balance sheet of the bank and statement of income. In other terms, the non-financial statement variables includes branches of a specific bank, size, location of the bank, Haron and Sudin (2004). Rasiah (2010) stated that banks generate most of their income on their assets i.e. income and non-income generating. Rasiah (2010) made a classification of commercial banks as, interest and non-interest income.

Income Interest comprises of the rates of interest charged on borrowed funds, bank overdrafts and trade finance issued to borrowers. Income on interest free product is fee, commissions, charges on brokerage, and investments returns from subsidiaries companies and securities. In a study by Vong et al. (2009) posits that the main source of revenue is from interest income, this amounts to 80% of earnings from commercial banks. The other sources of bank revenue is from securities market are dividends and gains. The other small sources of income like service charge on deposit accounts and earnings from trust activities (Vong et al. 2009). The main role of commercial banks is lending which serves as a major source of income for commercial banks. In the banking sector, loans have the

highest returns on banks' balance sheet. Therefore, the more loans a bank offers, the more revenue they generate translating to more profits.

Abreu & Mendes (2000) state that banks must be cautious in lending loans since if they lend more to borrowers, they create exposer on their end in terms of liquidity and default risks which have a impacting negatively on profitability and long term business. Husni (2011) posits that the margin of interest on loans by commercial banks in Jordan is not only a major reason for profitable banks, but also has a positive relation with profitability. This is has also be contributed by Vong et al. (2009) on findings of Abreu and Mendes (2000) which shows that there is a loan ratio and profitability are positively related. Rivard Thomas (1997) study indicates that profitability of banks can measured better by returns on assets (ROA) since ROA will not be distorted by the high equity multiplier factor. Therefore, this study will use (ROA) to measure the profitability of commercial banks in Kenya. Return on assets implies that managerial efficiency in actual sense, and shows the effectiveness and efficiency in managing banks in a bid too transforming the assets into profits. Although net income shows us how well a bank is doing, it fails to make adjustment to the size of the bank, thus unable to make comparison on the wellbeing of other related banks. The main profitability measure of banks is to bring that is more accurate relating to the size of the bank is the return on assets (ROA). The ROA is defined as net income divided by total assets.

2.4 Empirical Review

Empirical literature has provided evidence that CIS is associated with lower default rate on both micro and macro levels. In addition, an advancing empirical evidence body backs

up the evidence that information sharing enhances credit market performance. The impact of CIS has once been tested by conducting a cross country study on the credit performance. On a survey of credit reporting in 43 countries, Jappelli and Pagano (2002), show that in countries where CIS is well established, the default rates are actually lower.

Padilla and Pagano (1997), used a model with two periods where it was advantageous for banks which had acquired information private. The findings were that the private information is an advantage to banks and have market power with regard to the borrowers. This will cause hold-up problems in the long run. When commercial banks share information concerning their borrowers, there will be inability to get more details about them, leaving a bigger number of the excess to entrepreneurs.

McIntosh and Wydick (2009), found out that default rates decrease marginally after the introduction of credit reference bureaus. Jappelli and Pagano (2002), found that information sharing will cause reduction at loan risks by three to four percentage points over a base rate of 7.7 percent. Luoto, McIntosh, and Wydick (2007), found a big percentage of 3.3 decrease in the fraction of loans with any late intermediate payments. They also found out that the trend on default becomes notably negative when the the use of bureaus is put in place. They concluded that the impact in the Guatemalan works of experiment indicates of marginal reduction in loans default rate, although the results are less than the expectations (Luoto et.al, 2007).

Brown, Jappelli, and Pagano (2007), using firm level panel data in transition economies, found that the cost of credit reduces as information sharing increases between lenders (McIntosh and Wydick, 2007). Kalberg and Udell (2003), also contributed to this, who

report that history of credit in Dun & Bradstreet's documents improve prediction in default compared to only using financial statements. Cowan and De Gregorio (2003), findings were that in Chile both positive and negative information in credit reports make a contribution to predicting default in loans (Pagano & Jappelli, 2005).

Kipyegon (2011) did a study on credit information sharing and bank performance in Kenya. A case study of Kenya Commercial Bank was done whereby a sample population of 50 branches was used. A sample was for 69 employees in all the branches was randomly selected. The study established that complete information about the borrowers' payment characteristic helps the banks to estimate their chance of recovering the loans is 50% , those who strongly agreed is 36.4%, those who were uncertain are 13.6%. This was 19 therefore interpreted to mean that when bank have information concerning the payment of a borrower, then they can use such past information to calculate on their chances of recovering such loans from them. The study also established that showed that when the banks get quality information about the borrowers' credit history it helps the bank assess its risk princely and reduce the search costs.

Gachora (2011) studied the effect of credit information sharing on loan performance in commercial banks in Nairobi county .The research was exploratory and used descriptive design. The study demonstrated that, after establishing Credit Reference Bureaus, banks are able to issue lesser and short period loans and to acquire issue bank guarantees. This showed that sharing information allowed lenders to see the entire indebtedness of their borrowers. The study also found that sharing of credit information among borrowers is connected with higher and more affordable credit for the borrowers. It was also

established that introduction of CIS improves the quantity of small business loans and helped to expand credit to riskier borrowers.

Kioko (2014) assessed the impact of credit information sharing influence on financial performance of licensed deposit taking Sacco. The study used explanatory design to explain the relationship between the two variables. The study targeted 60 deposit taking SACCOs and data was collected using questionnaires. In order to find out if an independent variable predicts a given dependent variable, regression analysis was also used. From the research findings, the conclusions made were that credit information sharing significantly affects performance Sacco.

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

2.5 Summary of Literature Review

Literature provides significant effect of credit information sharing on non-performing loans in micro and macro-economic levels, Brown, Jappelli and Pagano (2006), confirm that theories predict effects of CIS on the likelihood default and rates of interest.

Empirical analysis of data from CRB confirming that credit reports will reduce the costs selection of bankers by giving them permission to make accurate predictions on loan defaults for individuals (Barron and Staten, 2003; Kallberg and Udell, 2003; Cowan and De Gregorio, 2003; , 2004; Luoto etal, 2007).

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

2.6 Conceptual Framework

Figure 2.1: Conceptual Framework

| Independent Variables | Dependent Variable |
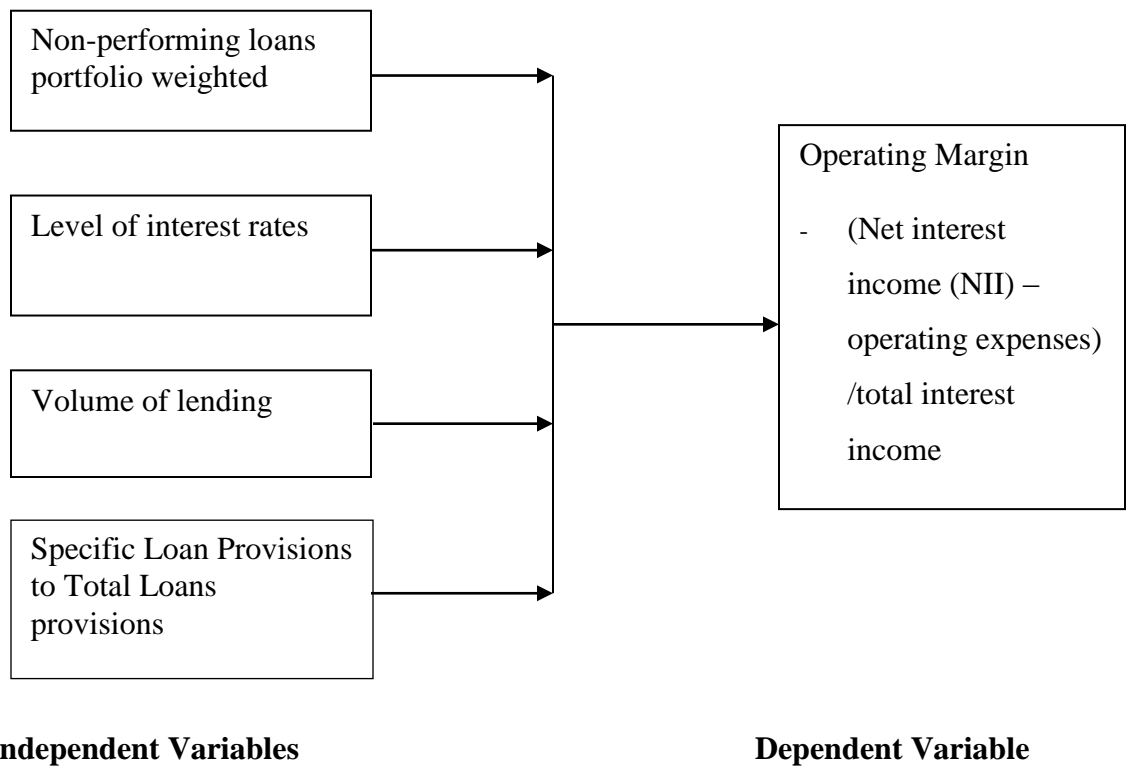
Source: author (2016)

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

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

3.2 Research Design

The study used a descriptive survey design in evaluating the impact of CIS on profitability of commercial banks in Kenya. A quantitative approach was applied. Description emerges following creative exploration, and serves to organize the findings in order to fit them with explanations, and then test or validate those explanations (Krathwohl, 1998). The researcher described and examines the main variables to measure and organize findings before validating them. The study employed descriptive statistical analysis and methods of analyzing correlations and regressions between multiple variables.

3.3 Population and Sample of the Study

The target population is a group of elements to which the researcher wants to make inference and of which have common characteristics (Mugenda & Mugenda, 2003). All the 43 commercial banks licensed by the Central Bank form the target population as at December 2015. This was based on the consideration that ensured a full representation of

the commercial banks. A census approach was used in this study to allow all commercial banks to be included in the study since the number is small and reachable.

3.4 Data Collection

The study used secondary data, where profitability reports was obtained from CBK banking supervision department, monthly economic reviews, quarterly reviews and annual reports. Monthly average ratios of profitability were extracted from the financial monthly economic review reports. The data covered a period of 10 years from the year 2005 to 2014. Data on credit information sharing was obtained from CBK banking supervision department, and credit reports requested by commercial banks from the two licensed CRBs will be extracted from the reports.

3.5 Data Analysis

The study aims to find out the causal effect of credit information sharing on profitability among commercial banks in Kenya. A multiple regression analysis was used to establish the relationship between the variables. Data was captured and analyzed using Statistical Package for the Social Sciences (SPSS). Trend analysis was carried out to identify the movement of profitability and request of credit reports among commercial banks.

The regression equation used was derived from the equation of a straight line which resulted in the model given below:-

$Y = \beta o + \beta 1\ X_1 + \beta_2\ X_2 + \beta_3\ X_3 + \beta_4 X_4 + \varepsilon t$

Where;

Y is the Operating Margin = (net interest income (NII) – operating expenses) /total interest income

βo is the regression constant

X1-non-performing loans portfolio,

X2-level of interest rates,

X3-volume of lending,

X4- Specific Loan Provisions to Total Loans provisions

β_1, β_2, β_3 are the coefficient variables

εt is the error term which represents the difference between the score predicted by the line at time "t" and the score that were actually be obtained.

The study used T-test to test for significance of differences in profitability 5 years before and 5 years after introduction of Credit Reference Bureaus. In addition, the test of significance (hypothesis test) was done to determine whether the effect was significant.

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

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

The main objective of the study was to determine the effect of credit information sharing on profitability of commercial banks in Kenya. The chapter presents findings of data analysis and their interpretations. It commences with the test of regression assumptions to determine the suitability of the data including test of normality, linearity, independence, homogeneity and collinearity. The study used descriptive and inferential analytical techniques to analyze the data obtained. The study used regression models. Before the regressions model is run, descriptive statistics and correlation analysis were computed. Correlation analysis shows the relationships between the different variables considered in the study. The correlation matrix presented simple bivariate correlations not taking into account other variables that may influence the results.

4.2 Tests of Regression Assumptions

The study ran the test of regression assumptions, the tests employed consists of test of normality, a test of linearity, a test of independence, test of homogeneity of data and a test to determine collinearity. The Shapiro-Wilk test was used to measure the rate of data normality, the test has the ability to sense any deviation from normality caused by skewness or kurtosis or both. The range of the statistical figures starts at 0 to 1 and any figures that are more than 0.05 implies that there is normality in the data (Razali and Wah, 2011). To test for linearity, ANOVA test was used to calculate linearity and nonlinearity aspects of a pair of variables where non linearity is determined by the

significance of the F value of significance for nonlinearity factors below the 0.05 mark (Zhang *et al*., 2011). The error term independence, shows independence of observations, by using the Durbin-Watson test with statistics ranges from 0 to 4. The values that lying at range of 1.5 and 2.5 indicating that the observation made is very independent (Garson, 2012).

The test of homoscedasticity was also carried out, the Levene's test of homogeneity of factor variances was employed. The Levene statistical significance stood at $\alpha = 0.05$ then the grouping of data does not have equality of variances used (Gastwirth *et al*., 2009). Levene's test does measurement if the variance in the variables both dependent and independent variables is the same or not. It checks the similarity of the scores variable (Bryk and Raudenbush, 1988). Multi collinearity was done by calculating the Variance Inflation Factors (VIF) and its reciprocity meaning the rate of tolerating. This is where the predicting variables in a multiple regression analysis have a high level of correlation translating to difficulty in determining the main contributing factor of the consequent predictors to the dependent variable variance. This assumes that the magnitude of VIF has a maximum value of ten (Robinson and Schumacker, 2009).

In Table 4.1, the regression assumptions were tested and summarized. The achieved levels of the various tests statistics are outline under the assumptions made. For multi collinearity the variances inflation factor (VIF) and its reciprocity (Tolerance) figures are outlined. From this outcomes, there was an indication that the regression assumptions were achieved and the data was further statistically analysed by use of regression analysis as show in the sections below.

Table 4.1: The Results Regression Assumption and Test of Statistics Used

	N	Normality (*Shapiro-Wilk test*)	Linearity (*ANOVA test*)	Independence (*Durbin-Watson test*)	Homogeneity (*Levene test*)	Collinearity VIF (*Tolerance test*)
Threshold: Assumption is met if		p > 0.05	p > 0.05	1.5- 2.5	p > 0.05	VIF 10 max
non-performing loans portfolio	43	0.39	0.42	2.02	0.32	1.25 (0.80)
level of interest rates	43	0.66	0.37	1.64	0.47	1.59 (0.63)
volume of lending	43	0.10	0.16	1.73	0.78	1.51 (0.66)
Specific Loan Provisions to Total Loans provisions	43	0.10	0.31	2.03	0.75	1.47 (0.71)
Operating Margin	43	0.35	0.41	2.11	0.42	1.39 (0.72)

All the values in this study were above the 0.05 mark, this confirms normality. Normality makes the assumption that the distribution of samples is good given normality in the mean. Linearity test was also tested by use of the ANOVA test which calculates the linearity and non-linearity for a pairing of variables where, non-linearity is significant if the F significant values, the non-linear component is less than 0.05 (Zhang *et al*., 2011). The calculated values were more than 0.05 implying that linearity relations (slope that is constant) for the dependent variable and predictor variables. Assessment of independence for the error terms was also done by the study, implying that independent findings using

Durbin-Watson test the range of statistic from 0 to 4. The test results lie in a range of 1.81 and 2.21 confirming error terms independence.

By use of Levene's test of homogeneity, homoscedasticity was tested using variances. There was no significant since the level was at $\alpha= 0.05$ meaning there is homogeneity. Variance Inflation Factors (VIF) was computed to assist in testing Multi collinearity and its reciprocal known as tolerance. In this situation, there is a high level of correlation between the predictor variables in a multiple regression analysis resulting in difficulties in determining the major factor of consequent predictors to the variances in the dependent variables. There is a high VIF immensity value of not more than ten (Robinson and Schumacker, 2009). The tolerance levels in this study falls between 0.60 up to 0.80 thus the reciprocity; which is VIF will range from 1 and 2, way below the magnitude.

4.3 Descriptive Analysis

Table 4.2 presents the descriptive statistics and the distribution of the variables considered in this research: level of interest rates, non-performing loans portfolio, volume of lending, specific loan provisions to total loans provisions and operating margin. The descriptive statistic considered were minimum, maximum, mean, standard deviation, skewness and kurtosis.

Table 4.2: Descriptive Statistics

	Min	Max	Mean	Std. Deviation	Skewness		Kurtosis	
					Statistic	Std. Error	Statistic	Std. Error
Non-performing loans portfolio	6,888,087,000	16,473,353,000	8,055,219,000	112.15750	.900	.289	.787	.570
Level of interest rates	16.45	23.48	18.3024	4.60114	-1.492	.289	2.105	.570
Volume of lending	96,098,234,000	272,786,234,000	128,089,234,000	234.36099	2.520	.304	10.109	.599
Specific Loan Provisions to Total Loans provisions	.274	.385	.2907	.65285	1.451	.289	3.779	.570
Operating Margin	.17	.41	.3456	.25042	.366	.289	-.565	.570

Table 4.2 shows that non-performing loans portfolio had a mean of 8,055,219,000 and standard deviation of 112.157. That is, non-performing loans is, on average, 8,055,219,000 across all the years under study. Mean value of level of interest rates was 18.3024 which denotes that it, averagely all the banks under the study period charged 18.055 percent interest on credit facilities. Furthermore on average the volume of lending in all the ten years under study was ksh 128,089,234,000 meaning that banks advanced their customers this amount of money as loans for the period under study on average. Further the specific loan provisions to total loans provisions was 0.2907 on average and operating margin was 0.2504 meaning that for every ksh total income, only 2907 cents is left after payment of the operating expenses. This implies that there will be 2907 cents only left to cater for the non-operating expenses. A higher operating margin shows that the banks are profitable from its business to cater for its variable costs as well as its fixed costs.

4.4 Correlation Analysis

Pearson correlation was used to measure the level of relationship among the independent variables and the dependent variables in the study. The coefficients in Pearson correlation were found to lie between -1 to +1. The values that were negative imply that negative correlation while the values that are positive mean that they are positively correlated. Additionally, in a case where the Pearson's coefficient is greater than 0.3 it means that the values have are weakly correlated, Pearson coefficient $>0.3 <0.5$ implies that there is a correlation that is moderate and Pearson coefficient greater than 0.5 indicates correlation that is very strong.

Table 4.3: Correlation Analysis Matrix

		Non-performing loans portfolio	Level of interest rates	Volume of lending	Specific Loan Provisions to Total Loans provisions	Operating Margin
Non-performing loans portfolio	Pearson Correlation	1				
	Sig. (2- tailed)	0.000				
	N	430				
Level of interest rates	Pearson Correlation	0.742	1			
	Sig. (2- tailed)	0.000	0.000			
	N	430	430			
Volume of lending	Pearson Correlation	0.842	0.542	1		
	Sig. (2- tailed)	0.000	0.000	0.000		
	N	430	430	430		
Specific Loan Provisions to Total Loans provisions	Pearson Correlation	0.771	0.664	0.732	1	
	Sig. (2- tailed)	0.000	0.000	0.000	0.000	
	N	430	430	430	430	
Operating Margin	Pearson Correlation	0.811	0.732	0.789	0.691	1
	Sig. (2- tailed)	0.000	0.000	0.000	0.000	
	N	430	430	430	430	

The results in Table 4.3 indicate that the relationship between Non-performing loans portfolio and banks operating is strong, positive and statistically significant (r =.811, p-value=.000). Similarly, the relationship between level of interest rates and banks operating margin is strong, positive and statistically significant (r=.732, p-value=.000). The relationship between volume of lending and banks operating margin was also significant and strong (r=.789, p-value=.000). Moreover the relationship between specific loan provisions to total loans provisions and banks operating margin was also strong and significant (r=.691, p-value=.000). This implies that the variables considered play a critical role of influencing banks profitability in Kenya.

4.4.1 Model Summary

Regression model is used here to describe how the mean of the dependent variable changes with changing conditions. Regression Analysis was carried out for focus on Non-performing loans portfolio, level of interest rates, and volume of lending and specific loan provisions to total loans provisions. To test for the relation that the variables that are independent have operating margin, the study did the multiple regression analysis.

Table 4.4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.937	0.878	0.789	0.5273

The independent variables studied indicate 87.8% of operating margin as constituted by R^2. This implies that other contributing factors that are not in this study are contributing up to 12.2% of the operating margin. This implies that these variables are very significant

therefore need to be considered in any effort to boost profitability of commercial banks in Kenya. The study therefore identifies variables as critical determinants of operating margin.

Table 4.5: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.534	2	1.267	9.475	0.0179[a]
Residual	9.307	428	2.327		
Total	3.465	430			

NB: F-critical Value 88.33 (statistically significant if the F-value is less than 88.33: from table of F-values).

a. **Predictors: (Constant),** Non-performing loans portfolio, level of interest rates, volume of lending and specific loan provisions to total loans provisions.

The significance value falls at 0.0179 this figure smaller than 0.05 indicating that the model is significant statistically in forecasting how Non-performing loans portfolio, level of interest rates, volume of lending and specific loan provisions to total loans provisions influence the operating margin in Kenya. In this study, the F critical value at 5% level of significance stood at 3.23. Because the F computed is more than the F critical value which is 9.475, implying that the entire model is significant.

The study ran the procedure of obtaining the coefficients, and the results were as shown on the table below.

Table 4.6: Coefficient Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.147	1.2235		1.615	0.367
Non-performing loans portfolio	0.752	0.1032	0.152	4.223	.0192
Level of interest rates	0.487	0.3425	0.054	3.724	.0269
Volume of lending	0.545	0.2178	0.116	3.936	.0251
Specific loan provisions to total loans provisions	0.439	0.1937	0.263	3.247	.0454

Multiple regression analysis was conducted as to determine the relationship between operating margin and the four variables. As per the SPSS generated table above, the equation ($Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$) becomes:

$Y = 1.147 + 0.752 X_1 + 0.487 X_2 + 0.545 X_3 + 0.439 X_4$

According to the regression equation established, taking all factors into account (Non-performing loans portfolio, level of interest rates, volume of lending and specific loan provisions to total loans provisions) constant at zero was 1.147. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in Non-performing loans portfolio will lead to a 0.752 increase in operating margin; a unit increase in level of interest rates will lead to a 0.487 increase operating margin, a unit increase in volume of lending will lead to a 0.545 increase in operating margin and a unit increase in specific loan provisions to total loans provisions will lead to a 0.439 increase in operating margin. At 5% level of significance and 95% level of confidence, of non-

performing loans portfolio had 0.0192 level of significance level of interest showed a 0.0269 level of significance, volume of lending showed a 0.0251 level of significance, and specific loan provisions to total loans provisions showed a 0.0454 level of significance hence the most significant factor is non-performing loans.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the study and makes conclusion based on the findings. The recommendations of the study and areas for further research are also presented.

5.2 Summary of Findings

The main objective of the study was to determine the effect of credit information sharing on profitability of commercial banks in Kenya. The study used descriptive and inferential analytical techniques to analyze the data obtained. The findings indicated that the regression assumptions were achieved and further statistical analysis was done including regression analysis. The findings showed that non-performing loans portfolio had a mean of 8,055,219,000 and standard deviation of 112.157. That is, non-performing loans is, on average, 8,055,219,000 across all the years under study. Mean value of level of interest rates was 18.3024 which denotes that it, averagely all the banks under the study period charged 18.055 percent interest on credit facilities. Furthermore on average the volume of lending in all the ten years under study was ksh 128,089,234,000 meaning that banks advanced their customers this amount of money as loans for the period under study on average. Further the specific loan provisions to total loans provisions was .2907 on average and operating margin was .2504 meaning that for every total income in Kenya shilling, only 2907 cents will be left after payment of operating expenses, further implying that only 2907 cents remains to cover for the non-operating expenses. This is relatively a more operating margin showing that banks are profitable in their businesses.

Other studies reviewed, congruently indicated that credit information sharing does indeed favor performance of banks. However, this benefit could be limited as the Kenyan credit market grows and rather than improving it, credit information sharing might deteriorate the profitability of banks. In this light, the researcher disagrees as the Kenyan credit market still has room for growth and at the moment of carrying out this research, there was already considerable competition in the market. Therefore, credit information sharing will serve to better the Kenyan credit market and to improve the performance of commercial banks in Kenya.

5.3 Conclusion

Regression Analysis was carried out for focus on Non-Performing Loans portfolio, volume of lending, level of interest rates and specific loan provisions to total loans provisions.

The independent variables that were studied were four and they explain 87.8% of the operating margin as indicated by the R^2. This implies that these variables are very significant therefore need to be considered in any effort to boost profitability of commercial banks in Kenya.

The significance value was less that 0.05 thus the model was statistically significance in predicting how Non-performing loans portfolio, level of interest rates, volume of lending and specific loan provisions to total loans provisions influence the operating margin in Kenya. Since F calculated is greater than the F critical, this shows that the overall model was significant. Multiple regression analysis was conducted as to determine the relationship between operating margin and the four variables. According to the regression

equation established, taking all factors into account (Non-performing loans portfolio, level of interest rates, volume of lending and specific loan provisions to total loans provisions) constant at zero was 1.147. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in Non-performing loans portfolio will lead to a 0.752 increase in operating margin; a unit increase in level of interest rates will lead to a 0.487 increase operating margin, a unit increase in volume of lending will lead to a 0.545 increase in operating margin and a unit increase in specific loan provisions to total loans provisions will lead to a 0.439 increase in operating margin. At 5% level of significance and 95% level of confidence, of non-performing loans portfolio had 0.0192 level of significance, implying that it is statistically significant, level of interest showed a 0.0269 level of significance, implying that it is statistically significant, volume of lending showed a 0.0251 level of significance implying that it is statistically significant, and specific loan provisions to total loans provisions showed a 0.0454 level of significance hence the most significant factor is non-performing loans.

5.4 Recommendations of the Study

Currently the credit reference bureaus are licensed and regulated by the Central Bank of Kenya. Credit information shared with these institutions by the banks is private and confidential and cannot be shared without the authorization of the owner. It is recommended that CRBs should have stringent measures to ensure that this is adhered to at all times to maintain integrity. The Central Bank of Kenya in February 2014 required that commercial banks and microfinance to share full filed information. This study recommends that other institutions offering other forms of credit such as trade credit to share information with Credit Reference Bureaus to enrich the database and to give a

complete overview of borrowing entities in the view of diminishing information asymmetry in the Kenyan credit market.

5.5 Suggestions for Further Studies

The study was limited to a short time period of only 10 years to analyse the effect of credit information sharing on the profitability of commercial banks in Kenya. It therefore recommends further research to be done at a future period to fortify and supplement the findings of this research. Studies on the effect of additional Credit Reference Bureaus in Kenya on the credit market could be carried out. This is in addition to studies to determine whether the Kenyan credit market would benefit more from having a public Credit Reference Bureau rather than only private ones and whether the private credit reference bureaus in existence are profitable in their undertaking of being the custodians of vast borrowers' credit information.

5.6 Limitations of the Study

The credit information sharing concept is fairly new in Kenya and thus borrowers and lenders have not fully familiarised themselves with the information leading to information asymmetry. The study period was longer to cater to get more accurate results.

Although the first CRB's was registered in 2008, listing of loan defaulters began in October 2010. This therefore makes the period under study shorter suggested in research methodology. The required data was available to analyze and make conclusions.

This study was limited to commercial banks in Kenya thus only considered the formal sector and no coverage of data on debts with informal and rural lenders. All the

commercial banks in Kenya were studied to since the population is small and manageable and the data is also available.

The variables used in the study were only four thus not covering a broad perspective on other factors that might affect credit information sharing on profitability of commercial banks in Kenya. The study suggested more variables to be used so as to identify other factors that can affect the effect of credit information sharing on profitability of commercial banks in Kenya.

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APPENDICES

Appendix I: Classification of Banks according to Market Share.

	List of commercial banks
N	**Large Peer Group > 5%**
1	Kenya Commercial Bank Ltd
2	Equity Bank Ltd
3	Barclays Bank of Kenya Ltd
4	Standard Chartered Bank Ltd
5	Co-operative Bank of Kenya Ltd
6	CFC Stanbic Bank Ltd
	Medium Peer Group > 1% &< 5%
7	I & M Bank Ltd
8	Commercial Bank of Africa Ltd
9	Citibank, N.A.
10	Diamond Trust Bank Ltd
11	NIC Bank Ltd
12	National Bank of Kenya Ltd
13	Bank of Baroda Ltd
14	Bank of Africa Kenya Ltd
15	Prime Bank Ltd
16	Chase Bank Ltd
17	Housing Fin. Co. of Kenya Ltd.
18	Family Bank Ltd
19	Imperial Bank Ltd
20	Bank of India
21	Ecobank Ltd
	Small Peer Group <1%
22	Fina Bank Ltd
23	Consolidated Bank of Kenya Ltd

24	African Banking Corporation Ltd
25	Gulf African Bank Ltd
26	Giro Commercial Bank Ltd
27	Equatorial Commercial Bank Ltd
28	Fidelity Commercial Bank Ltd
29	K-Rep Bank Ltd
30	Development Bank of Kenya Ltd
31	Trans-National Bank Ltd.
32	Habib Bank A.G Zurich
33	Guardian Bank Ltd
34	First Community Bank Ltd
35	Victoria Commercial Bank Ltd
36	Habib Bank Ltd
37	Oriental Commercial Bank Ltd
38	Credit Bank Ltd
39	Paramount Universal Bank Ltd
40	Middle East Bank (K) Ltd
41	Jamii Bora Bank Ltd
42	UBA Kenya Bank Ltd
43	Dubai Bank Kenya Ltd
44	Charterhouse Bank Ltd