EFFECT OF CREDIT INFORMATION SHARING ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

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

Signed…… Date ……..

Caroline Wambui Thuo

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

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First, I thank the almighty God for life and knowledge which enabled me to undertake this research proposal.

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DEDICATION

I dedicated this research project to my loving husband, Dickson Murage for the support, encouragement and prayers during the entire period of my study.

God bless you.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CAMEL - Capital Adequacy, Asset Quality, Management Efficiency, Earning Ability and Liquidity

CBK - Central Bank of Kenya

CESEE - Central, Eastern and South-Eastern Europe

CIS - Credit Information Sharing

CRB - Credit Reference Bureau

DFIs - Development Finance Institutions

EDF - Expected Default Frequencies

LGD - Loss Given Default

LLP - Loan Loss Provisions

MFIs - Micro Finance Institutions

NPLs - Non-performing Loans

PPI - Payment Performance Index

ROA - Return on Asset

ROI - Return on Investment

SACCO's - Savings and Credit Cooperative Organizations

ABSTRACT

Credit information sharing is a mechanism that allows credit institutions like the banks and credit information providers like credit reference bureaus to share any information pertaining to debtors' performance as far as credit matters are concerned. The study sought to determine effect of sharing of credit information on banks' performance in financial perspective. The research utilized a descriptive research design. For this research all 43 commercial banks licensed under the banking Act as at 31 December 2015 in Kenya form the target population. A census approach was employed since the number of banks are only few. Secondary data was used in this study. The data was collected from CBK annual supervision reports and the banks specific audited accounts. The study used Statistical Package for the Social Sciences (SPSS) to run a regression model that was used to determine effects of sharing of credit information on banks' performance in financial perspective.

The study established an insignificant negative relation between credit information sharing assets quality and banks' performance in financial perspective. Results also found a negative but significant relation between capital adequacy and financial performance and an insignificant positive relation between liquidity and banks' performance in financial perspective. The study concluded that failure to share credit information increases credit risk, which in turn reduces banks' performance in financial perspective. The study recommended that management of commercial banks in Kenya should set up appropriate mechanisms to share credit information so hence to reduce credit risk and enhance their performance in financial perspective.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Lending decisions are made under the environment of uncertainty; informational asymmetry is the key challenge that leaves credit practitioners with a lenders puzzle when appraising application for credit administration. The questions that come in mind are: will the borrower pay at all? Will he pay in time? Is that lending decision profitable? Lenders do not know either the historical behavior or the characters of the borrowers. This challenge creates moral hazard as the lenders are forced to make lending decision based on the general market behavior and not the specific characteristics of the borrower (Chen, 2010).

The higher probability of default drastically increases the cost to income ratio due to adverse selection. The role played by commercial banks as the main financial intermediary cannot be understated irrespective of the size of banks which would vary from country to country (Schaefer, 1995). They match deficit and surplus through acceptance of deposits and giving credit to borrowers. Execution of this role exposes banks to credit risk which over the years has strongly come out as one of the contributors of banks collapse (Kimasar & Kwasira, 2014).

Gregory (2010) states credit risk as the risk that results to the counterparty inability/unwillingness to meet his contractual obligations upon maturity. Informational asymmetry breeds this challenge which can lead to collapse of financial market like it happened during the financial crisis. Informational asymmetry disadvantages one party

creating a state of imbalance in power hence getting into transactions which may go bad, this may led to market failure in the worst case.

The theory of delegated monitoring developed by Mathews and Thompson (2008) advocates for maximum monitoring of borrowers, assessing the borrower's credit worthiness in spirit of ensuring adherence to the set terms and conditions as suggested by Brown & Pagano (2006). Unavailability of accurate and real time credit history information which is fundamental in predicting the probability of default is a challenge facing the credit market. Credit reference bureaus present a solution to this challenge by availing a registry of borrower's credit profiles hence reducing moral hazard.

1.1.1 Credit Information Sharing

According to Pagano and Jappelli (2002) credit information sharing is a mechanism which allows credit information providers to share the borrowing details of their debtors with the licensed CRBs which correlate that data, analyze and generate report from which the credit market feeds. Information sharing is both from the credit providers to the bureau and bureau to the credit providers inform of credit reports.

Sinare (2008) asserts that CRB are those institutions which collect and share data on repayment habits and the current debt of their debtors. This is compiled into a report which is made available to the credit providers.

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

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

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

1.1.2 Financial Performance

Financial performance is firm's ability to generate resources, from its daily procedures, for a certain time period. Financial performance may also refer to the firm's ability to make good use their resources in an effective and efficient manner for achievement of the firm's objectives and goals (Warsame, 2016). According to Kagoyire and Shukla, (2016) financial performance is the firm's ability to efficiently operate, be more profitable, to grow and survive for a long period of time. All organizations strive to utilize it resources effectively to achieve a high performance level especially in financial terms. Thus, financial performance is the outcome of any of many different activities undertaken by an organization (Fujo & Ali, 2016).

The function of allocation of resources from depositors to investors is one of the pivotal functions played by banks in any economy. Ability of banks to perform this intermediation function profitably has a massive effect on economic growth of a country.

Adverse cases in this sector has a contagion effect on the other players as it can result to bank run which if not contained can possibly lead to financial tribulation. Despite the good performance of some Kenyan tier 1 banks, there are some banks that have declared losses sending the wind of financial distress in the market (Oloo, 2011). This motivates the study with an aim of evaluating the relevancy of credit information sharing to bottom-line of banks. Among the main goals of commercial banks is profit maximization. Various parameters are employed to measure profitability.

1.1.3 Credit Information Sharing and Financial Performance

Credit information sharing is a mechanism, which allows credit information providers to share the borrowing details of their debtors with the licensed credit reference bureaus. The mechanism helps to build a registry from which the credit market feeds. According to Kallberg and Udell (2003), historical information exhibit great predictive power on the likely behavior of a borrower. The default predictive power is enhanced when all lenders enrich the credit registries with their debtors' information (Powell et al. 2004).

Credit information sharing reduces chances of information asymmetry and gives lenders visibility that enables them to know about customers before they engage them on credit. This happens through countering cases of adverse selection by availing the historical account of borrowers hence ensuring that only the safe borrowers are given credit. This will include the borrowers who are good but previously have been presumed bad hence

enables banks to grow their businesses by expanding their acceptance criterion (Pagano & Jappelli, 1993).

Other benefits of the mechanism of information sharing to the commercials banks include increasing the borrowers cost of default and hence increasing their repayment by countering the moral hazard (Padilla& Pagano, 2000). Additionally, the platform helps lenders to contract cases of information monopoly by leveraging on the fact that they have been transacting with those borrowers. By availing the borrowing histories credit reference bureaus have bridged this information monopoly which for long, domicile banks have capitalized to charge higher interest rates and other rent (Padilla & Pagano, 1997).

According to Bennardo, Pagano and Piccolo (2009) sharing of credit information generally leads to reduction of over-indebtedness of the borrower which is one of the contributors to default.

1.1.4 Commercial Banks in Kenya

According, CBK's directory there is forty-three commercial banks in the country some of which are internationally based. The headquarters of these banks are in Nairobi and they serve both retail and corporate customers. The banks in the country perform the following function: creation of money, community savings, ensure smooth support of payment mechanisms, ensure smooth flow of international transactions, storage of valuable goods and provision of credit services. The Central Banks of Kenya falls under Treasury docket, is accountable for the formulation and execution of monetary policy and foster of liquidity and proper operations of Kenyan commercial banks. This policy formulation

and implementation also include commercial banks financial risk management and financial performance (CBK, 2015).

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

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

1.2 Research Problem

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

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

Olwenyi and Shipho (2011) explored effects of CIS on banks' performance. They established that the mechanism significantly drives banks profitability. In this research profitability was measured by after tax profit which is an absolute measure. Measuring financial performance by profit before tax (absolute) diminishes the size differences of the institutions which can create a misleading conclusion. A relative measure like ROA and ROI are better measures of financial performance (Fraser and Fraser, 1991). This presents a conflict in terms of parameter for measuring the dependent variable. Some other researchers who have established the same relation includes Lin, ma & song (2012), Adano (2012), ocharo (2013), Chen (2010) Galindo & miller (2011).

Positive information sharing is vital in creation of "reputational collateral" which is imperative in elimination of the challenges in access to credit and implementation of risk based pricing in credit market. In absence of full file sharing (sharing of both positive and negative), the prompt payers will be left out of the rewards of credit information sharing. For the last 2 years in Kenya, banks have been sharing full file information as a matter of compliance but the inclusivity to entire portfolio is doubtful. The "third party" credit

providers are yet to embrace this mechanism. This concept is relatively new in Kenya both in research and practice since most studies have been biased towards "black listing". Scanty literatures exist in this area, necessitating this study. Thus, this research aim at investigating effects of sharing credit information on performance, taking a survey of all Kenyan commercial banks.

1.3 Research Objectives

1.3.1 General Objective

General objective of the study is to determine effect of sharing of credit information on Kenyan banks' performance in financial perspective.

1.3.2 Specific Objectives

Specific objective of this study was:

1. To determine how capital adequacy affect profitability of Kenyan commercial banks.
2. To assess how liquidity management affect banks performance in financial perspective in Kenya.
3. To assess effect of assets quality on banks performance in financial perspective in Kenya.

1.4 Research Question

How credit information sharing, capital adequacy, assets quality, management efficiency and liquidity management affect return on asset of Kenyan commercial banks?

1.5 Value of the Study

This research is an eye opener on effect of sharing of credit information on banks' performance in financial perspective especially after repeal of the credit reference bureau regulation 2008 in 2013 to include "third party" providers on a full file system of sharing credit information. The benefits of CIS will be quantified and other determinants that affect banks performance in financial perspective will be evaluated to help banks properly hedge on their bottom-line.

The research will as well serve as a tool to inform formulation of policy by the policy makers. The government and other institutions will draw much from the research when making decisions on resource allocation, ensuring efficiency and enhancing the credit experiences in their market.

To the academicians and researchers this study will add to existing literature forming a foundation on their researches on credit information sharing and how it reflects in the bank's financial performance.

The study will help the regulator, CBK to assess impact of sharing of credit information on banks' performance in financial perspective, an idea which can be generalized to the rest of the 'third party' providers.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Chapter two presents theoretical framework of this study. That is, theory of asymmetric information, moral hazard theory and multiple-bank lending model. Empirical literature review is also done with keen interest on the objective of the study, methodology and results.

2.2 Theoretical Review

Three theories which establish the foundation of this study are theory of asymmetric information, moral hazard theory and multiple bank lending models.

2.2.1 The Theory of Asymmetric Information

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

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

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

Further, with credit information sharing, lenders are able to expand the acceptance criterion hence ability to spur business growth and monitors their portfolio to adjust their decisions appropriately based on the alerts about deterioration of the debt serviceability capacity of the borrower.

2.2.2 Moral Hazard Theory

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

According to Klein (1992) credit information sharing motivates borrowers to honor their contractual obligations. Borrowers will likely honor their loans obligations since they know if they default, they will be "black" listed which essentially means they will be excluded from formal borrowing in future. Both cases demonstrate that default attract heavy penalty in terms of interest rates or exclusion from future borrowing hence

information sharing is a mechanism that helps to overcome the moral hazard challenges postured by borrowers (Padilla & Pagano, 2000).

2.2.3 Multiple – Bank Lending Model

Sharing of credit information between banks and third party credit providers as defined by the CRB regulation 2013, credit institutions improves assessment of their customers (applicants). Ability to get information about an applicant's financial performance with other lenders over a period of time makes it possible to identify risk and be able to objectively measure risk at that point of application.

In the context of multiple- bank Operation under "dark "environment limits objective assessment as the lenders are not able to determine the total exposure of an applicant hence difficult to determine the ability to repay. According to Bennardo et al. (2008) sharing of credit information enables individual lenders to access overall indebtedness of borrowers hence reduces risk of over-borrowing. Again, in their research Bennardo et al. (2009) argue that if information is well shared, the credit market will expand because the risk caused by over-indebtedness is reduced hence uncertainty of non-repayment is drastically reduced.

2.3 Determinants of Banks Financial Performance

Determinants of banks' performance in financial perspective are divided into bank specific (internal) and the macro economic variables (Alburime, 2005). Determinants are those stochastic variables which determine output of an institution. Internal determinants are basically those factors that are affected by managers decisions and the board of an

institution while the macro factors are those that are outside the control of the institution and yet they influence profitability.

These factors would include macro-economic policy, policy stability, gross domestic product, inflation rate, interest rates and political stability of the economy. Internal factors are those which can be manipulated by the firm's managers themselves. Dang (2011) and other scholars have used CAMEL framework to represent internal factors. CAMEL represents capital adequacy, Asset quality, Management efficiency, Earning ability and Liquidity.

2.3.1 Capital Adequacy

Capital refers to own's equity invested in a venture. This is usually the last resort when an institution is facing financial distress (Athanasoglou et al., 2005). Capital is very imperative as it creates liquidity due to the elasticity of deposits in cases of financial distress. This avoids cases of distress (Diamond, 2000). Amount of capital to be held by an institution is measured by capital adequacy ratio which basically represents how adequate the institution is prepared to withstand financial crisis (Dang, 2011).

2.3.2 Quality of Assets

Quality of the assets that an institution holds is another imperative factor that influences profits. Assets generally refer to those investment from which the institution stands to accrue future economic benefits. Assets include credit portfolio, fixed assets and other investments. Margins on credit portfolio generate the largest portion of income. Interests losses arising from non- performing credit is the highest risk that can face a lending institution since it directly relates to daily activities of the business (Dang, 2011).

2.3.3 Liquidity Management

Ability of an entity to service its maturing obligations as and when they arise is an important determinant of the institution's profitability. Dang (2011), postulates that better liquidity is directly related to profitability. Some measures of liquidity suggested by researches include cash to deposit ratio, customer deposits to total assets.

2.3.4 Management Efficiency

Institutions are run by individuals whose decision bears long lasting consequences on the financial health of the institutions. Measuring this variable is a subjective process which varies from institution to institution. Some of the parameters include sales growth, earning growth, the quality of the assets held, levels of expenses incurred to produce certain level of output. Operating profit to income is one of the ratios that can be used to measure efficiency of management (Sangmi & Nazir, 2010). The higher this ratio is the better.

2.4 Empirical Review

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

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

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

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

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

established that 87% variations of banks' profitability is explained by volume of loans, level of non-performing loans, the interest rates charged and the total operating costs.

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

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

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

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

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

2.5 Conceptual Framework

An illustrative representation of the variables will have independent variables represented by credit information sharing, capital adequacy, Quality of assets, management efficiency and liquidity management while the explained (dependent) variable will be financial performance.

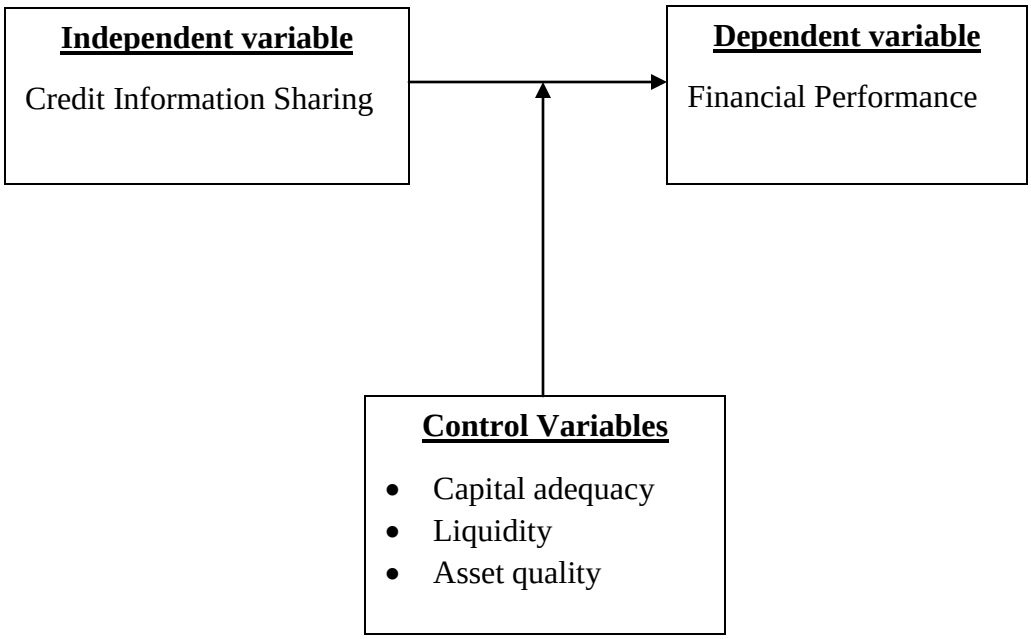

Figure 2.1 Conceptual Framework

2.6 Summary of Literature Review

This section details an overview of literature on credit information sharing on banks' performance in financial perspective. The theories on which the study will be built are reviewed; asymmetric information, moral hazard theory and multi-banking lending model. The theories are in agreement as they agree that operation under the "dark" environment where the lender doesn't know the borrower leads to adverse selection of a certain category of people called "serial defaulters" which spill over from one bank to the others. The information asymmetry allows serial defaulter to borrow from all the possible lenders and hence default.

Different researchers have established various grounds on effect of sharing of credit information on banks' performance in financial perspective. For instance Jappelli and Pagano (2007) established that the institutions that share information are directly related to financial performance. Some other researchers who have established the same relation

include (Ocharo 2013; Chen 2010; Galindo & Miller 2011,). Positive information sharing is key in creation of "reputational collateral" which is imperative in elimination of the challenges in access to credit and implementation of risk based pricing in credit market. In absence of full file sharing (sharing of both positive and negative), the prompt payers will be left out of the rewards of credit information sharing.

Since the advent of full file sharing in 2013, banks have been sharing full file information as a matter of compliance but the inclusivity to entire portfolio is doubtful. The "third party" credit providers are yet to embrace this mechanism. This concept is relatively new in Kenya both in research and practice since most studies have been biased towards "black listing". Scanty literatures exist in this area, necessitating this study. Therefore this research will fill the gap by looking at the effects of sharing of credit information (full file) on credit market financial performance taking a survey of all Kenyan banks.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Chapter three focuses on the study research design, study population, the sample design, data collection techniques and techniques of analysis.

3.2 Research Design

A research design refers to plan which guide a researcher on how to organize the research activities (Bryman & Bell 2003). A research design presents a framework or arrangement of action for a study. A descriptive research design was adopted in this study. A descriptive research defines or explains a subject by creating a pool of events, people and problems through data collection. This design is preferred for this research because it enables generalization of the findings to the entire population/industry. In addition, descriptive research design accommodates analysis and relation of variables.

3.3 Population

Population refers to a set of people or items with similar characteristics which a researcher intends to study and to draw statistical inferences or conclusions (Gall et al., 2006. For this research all the 43 commercial banks licensed under the banking Act as at 31 December 2015 in Kenya form the target population. A census approach was employed since the number of banks are only few.

3.4 Data Collection

Secondary data was the main source of data since it is readily available and imperative in providing collective information to address the problem of the study. The data was collected from CBK annual supervision reports and the banks specific audited accounts. This data relates to total capital, total assets, total NPLs, total loans and advances. In addition, the annual credit reports pulled from the bureaus normally known as referencing were collected for the period covering 2011 to 2015.

3.5 Data Analysis

Statistical Package for the Social Sciences (SPSS) was used to run a regression model that was used to establish effects of sharing of credit information on banks performance in financial perspective. The following analytical model adopted from Kocenda and Vojtek (2009) was used.

$$Y = \beta_o + \beta_1 (CIS) + \beta_2 (CA) + \beta_3 (LR) + \beta_4 (AQ) + \varepsilon$$

Where;

Y = Financial performance measured by ROA

β_o = Constant

CIS = Credit information sharing; represented by the natural logarithm the number of credit reports pulled

CA = Capital adequacy as ratio of Equity to Total Assets

LR = Liquidity as a ratio of Loans to Total Assets

AQ = Asset quality as a ratio of NPLs to Total Assets

β_1 - β_4 = Regression Coefficients

ε = Probable Error

3.5.1 Test of Significance

Significance was established by the analysis of variance, ANOVA, the F-test and t-test at 95% confidence level.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

Chapter four presents an analysis and presentation of the study findings. The chapter outlines descriptive statistics, correlation analysis, regression analysis and the discussion of the study findings.

4.2 Response Rate

This research targeted all the 43 commercial banks licensed under the banking Act as at 31 December 2015 for a period of 5 years and aimed at using data from 2011 - 2015. However, the study obtained credit information sharing data for only 20 banks which referenced with CRB Africa for a period of 3 years from 2013-2015 hence 60 data points which were adequate to run the regression model.

4.3 Descriptive Statistics

Table 4.1 Descriptive Summary Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA (Ratio)	60	-.019	.117	.02220	.019946
CIS (Ln)	60	2.303	12.927	6.77870	2.743673
CA (Ratio)	60	.004	.256	.06240	.061347
LR (Ratio)	60	.364	.699	.59356	.079368
AQ (Ratio)	60	.005	.397	.07294	.074963

Source: Research Findings

Table 4.1 illustrates descriptive summary statistics. The table indicates that average ROA for the sample banks was 0.220 with minimum and maximum values of -0.019 and 0.117. The study also shows that the average number of credit reports pulled were 6.78 with minimum and maximum values of 2.30 and 12.93 while the average capital adequacy (CA) ratio value was 0.6240 with minimum and maximum values of 0.04 and 0.256 respectively. The findings also indicate that the average liquidity (LR) ratio value was 0.59 with minimum and maximum values of 0.364 and 0.699, which indicates that the sampled banks had good liquidity levels above the recommended 20%. The findings also indicate that the average asset quality value (AQ) for the sampled banks was 0.073 which is low hence an indication that the sample banks have low credit risk levels.

4.4 Correlation Analysis

Table 4.2 Correlation Matrix

	ROA	**CIS**	**CA**	**LR**	**AQ**
ROA	1				
CIS	-.238	1			
CA	-.344**	.035	1		
LR	-.027	-.081	.203	1	
AQ	-.152	-.071	.192	-.059	1

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

Source: Research Findings

Table 4.2 shows correlation results of the study. Results show existence of a negative correlation between financial performance proxied using (ROA) and credit information sharing (CIS), capital adequacy (CA), liquidity (LR) and assets quality (AQ).

4.4 Regression Analysis

4.4.1 Model Summary

Table 4.3 shows the summary of a regression model, which comprises of the R-value, the R-square value, the adjusted R-square and the std. error of estimate.

Table 4.3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.425[a]	.181	.121	.0364236

a. Predictors: (Constant), AQ, LR, CIS, CA

Source: Research Findings

The results on table 4.3 indicate that independent variables explain 18.1% of variation in dependent variables as shown by the R square value of 0.181. Therefore, 81.9% of the variation is explained by other factors not considered in the model.

4.4.2 Analysis of Variance

Table 4.4 shows the analysis of variance (ANOVA) results

Table 4.4 Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.016	4	.004	3.037	.025[b]
	Residual	.073	55	.001		
	Total	.089	59			

a. Dependent Variable: ROA

b. Predictors: (Constant), AQ, LR, CIS, CA

Source: Research Findings

Table 4.4 shows that analysis of variance results. Results show that a regression model is a significant good predictor of relation between credit information sharing and banks' performance in financial perspective. This is indicate by the significance value (0.025<0.05).

4.4.3 Regression Coefficients

Table 4.5 shows regression coefficients of this study.

Table 4.5 Regression of Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.096	.037		2.564	.013
	CIS	-.003	.002	-.234	-1.901	.063
	CA	-.201	.081	-.318	-2.485	.016
	LR	.004	.040	.012	.095	.925
	AQ	-.055	.065	-.107	-.852	.398

a. Dependent Variable: ROA

Source: Research Findings

From the results on table 4.5 the regression equation can be fitted as follows

$$Y = 0.096 - 0.003X_1 - 0.201X_2 + 0.004X_3 - 0.055X_4 + \varepsilon$$

The regression equation above shows an insignificant negative relationship between credit information sharing (CIS), assets quality (AQ) and banks' performance in financial perspective (ROA). The results also show a significant negative relation between capital adequacy (CA) and banks' performance in financial perspective (ROA). The findings further show insignificant positive relationship between liquidity and banks' performance in financial perspective (ROA).

4.5 Interpretation of the Findings

The study findings established that there is an insignificant negative relation between credit information sharing, assets quality and banks' performance in financial perspective (ROA). This indicates there is an inverse relation between credit information sharing, assets quality and banks' performance in financial perspective hence the failure to share credit information increases credit risk, which in turn reduces banks' performance in financial perspective.

The study findings also established existence of a significant negative relation between capital adequacy and banks' performance in financial perspective. This indicates that high levels of capital enhance banks' performance in financial perspective. The findings of the study also established existence of a positive but insignificant relation between liquidity and banks' performance in financial perspective. This indicates a direct relationship between liquidity and banks' performance in financial perspective hence an increase in liquidity levels increases banks' performance in financial perspective.

Similar studies were obtained by Bennardo, Pagano and Piccolo (2009) who established that sharing of credit information generally leads to reduction of over-indebtedness of the borrower, which is one of the contributors to default. Ng'ang'a (2015) established a negative relation between credit information sharing and financial performance hence demonstrating the fact that credit information sharing betters management of credit risk exposure. Jappelli and Pagano (1999) also assert that credit information sharing reduces challenges of access to credit through determination of risk of the borrower.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

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

5.2 Summary

This study intended to determine effect of credit information sharing on banks' performance in financial perspective. The independent variable was credit information sharing while the dependent variable was financial performance. The study also included control variables, which included capital adequacy, liquidity and assets quality. The study carried out a census of the 43 commercial banks but managed to obtained credit information sharing data for only 20 banks, which referenced with CRB Africa for a period of 3 years from 2013-2015 hence 60 data points, which were adequate to run a regression model.

The results found the average ROA for the sample banks was 0.220 and the average number of credit reports pulled was 6.78 while the average capital adequacy ratio value was 0.6240. The findings also established that the average liquidity ratio value was 0.59 and the average asset quality value for the sampled banks was 0.073. The results of correlation analysis showed existence of a negative correlation between financial performance proxied using ROA and credit information sharing, capital adequacy, liquidity and assets quality.

The results on regression analysis established that independent and control variables explain 18.1% of the variation in the dependent variables (financial performance). The ANOVA results established that the regression model is significant a good predictor of the relation between credit information sharing and banks' performance in financial perspective. The results of regression coefficients established an insignificant negative relation between credit information sharing assets quality and financial performance of commercial banks in Kenya. The results also show a significant negative relationship between capital adequacy and financial performance and an insignificant positive relationship between liquidity and banks' performance in financial perspective.

5.3 Conclusion

The study findings established an insignificant negative relationship between credit information sharing assets quality and banks' performance in financial perspective. Therefore, the study concludes that failure to share credit information increases credit risk, which in turn reduces commercial banks financial performance. The findings also established a statistically significant negative relationship between capital adequacy and financial performance. The study thus concludes that high levels of capital enhance banks' performance in financial perspective. The findings established an insignificant positive relationship between liquidity and banks' performance in financial perspective in Kenya hence the conclusion that high liquidity levels increases banks' performance in financial perspective.

5.4 Recommendations

The study concluded that CIS enhance banks' performance in financial perspective. The study therefore recommends that the management of Kenyan banks should set up appropriate mechanisms to share credit information and also reference so as to reduce credit risk and enhance their financial performance.

The study concluded that liquidity and capital adequacy enhance banks' performance in financial perspective. The study thus recommends that banks should set high levels of liquidity and capital since high capital and liquidity levels influences performance of banks.

The study finally concludes that the CBK should set up additional prudential guidelines on credit information sharing by financial institution to support the existing legal framework since credit information sharing enhances performance of commercial banks.

5.5 Limitations of the Study

This study focused on credit information sharing and banks' performance in financial perspective thus the findings are limited to Kenyan banks and not other financial institution like Microfinance Banks, which also share credit information.

The study also obtained data from one credit reference bureau, which accepted to provide the data for the 3 years, which may not be adequate enough to analyze the effect of credit information sharing on banks' performance in financial perspective.

5.6 Suggestion for Further Research

This study focused on effect of credit information sharing and banks' performance in financial perspective. Commercial banks are part of financial institutions in Kenya hence; the study recommends an analysis of the effect of CIS on financial performance on other financial institutions like microfinance banks and credit only microfinance's. The study also recommends an analysis of credit information sharing on financial inclusion.

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APPENDICES

Appendix I: List of Licensed Commercial Banks

1. African Banking Corporation Ltd
2. Bank of Africa Kenya Ltd
3. Bank of Baroda Ltd
4. Bank of India
5. Barclays Bank of Kenya Ltd
6. CFC Stanbic Bank Ltd
7. Chase Bank (K) Ltd
8. Citibank N.A Kenya
9. City Finance Bank Ltd
10. Commercial Bank of Africa Ltd
11. Consolidated Bank of Kenya Ltd
12. Co-operative Bank of Kenya Ltd
13. Credit Bank Ltd
14. Development Bank of Kenya Ltd
15. Diamond Trust Bank Ltd
16. Dubai Bank Ltd
17. Ecobank Kenya Ltd
18. Equity Bank Ltd
19. Family Bank Ltd
20. Fidelity Commercial Bank Ltd

21. Fina Bank Ltd
22. First Community Bank Ltd
23. Giro Commercial Bank Ltd
24. Guardian Bank Ltd
25. Gulf African Bank Ltd
26. Habib Bank A.G Zurich
27. Habib Bank Ltd
28. Imperial Bank Ltd
29. I & M Bank Ltd
30. Kenya Commercial Bank Ltd
31. Middle East Bank Ltd
32. National Bank of Kenya Ltd
33. NIC Bank Ltd
34. Oriental Commercial Bank Ltd
35. Paramount Universal Bank Ltd
36. Prime Bank Ltd
37. Sidian Bank
38. Spire Bank
39. Southern Credit Banking Corporation Ltd
40. Standard Chartered Bank Ltd
41. Trans-National Bank Ltd
42. Victoria Commercial Bank Ltd
43. UBA Kenya Bank Ltd

Appendix II: Data Collection

Bank	Year	ROA	CIS	CIS (Ln)	CA	LR	AQ
Bank 1	2015	0.0404	411239	12.927	0.0044	0.6305	0.0212
	2014	0.0498	69670	11.152	0.0054	0.6216	0.0271
	2013	0.0478	36835	10.514	0.0067	0.6170	0.0333
Bank 2	2015	0.0271	29183	10.281	0.0078	0.4921	0.0628
	2014	0.0469	5646	8.639	0.0082	0.5517	0.0483
	2013	0.0044	3323	8.109	0.0083	0.5884	0.0156
Bank 3	2015	0.0167	694	6.542	0.0267	0.5237	0.0353
	2014	0.0176	29	3.367	0.0268	0.5048	0.0323
	2013	0.0256	174	5.159	0.0337	0.4847	0.0121
Bank 4	2015	0.0072	3282	8.096	0.0561	0.6682	0.0195
	2014	0.0067	351	5.861	0.0545	0.6721	0.0236
	2013	0.0063	469	6.151	0.0546	0.6637	0.0476
Bank 5	2015	0.0061	108	4.682	0.0893	0.6572	0.1314
	2014	0.0116	24	3.178	0.0854	0.5838	0.1168
	2013	0.0731	36	3.584	0.0717	0.4614	0.0923
Bank 6	2015	0.0166	24	3.178	0.0293	0.6258	0.0521
	2014	0.0179	7	1.946	0.0309	0.6474	0.0540
	2013	0.0215	15	2.708	0.0351	0.6503	0.0359
Bank 7	2015	0.0271	10843	9.291	0.0193	0.6916	0.0709
	2014	0.0282	1603	7.380	0.0219	0.6899	0.0496
	2013	0.0267	1807	7.499	0.0224	0.6897	0.0545
Bank 8	2015	0.0081	834	6.726	0.0464	0.6761	0.1191
	2014	0.0066	206	5.328	0.0476	0.6198	0.0408
	2013	0.0225	211	5.352	0.0535	0.5851	0.0350
Bank 9	2015	0.0243	19631	9.885	0.0036	0.0369	0.0181
	2014	0.0270	3100	8.039	0.0046	0.0648	0.0085
	2013	0.0286	2804	7.939	0.1258	0.6663	0.0053
Bank 10	2015	0.0352	151303	11.927	0.0054	0.6199	0.0421
	2014	0.0344	4936	8.504	0.0062	0.5786	0.0375
	2013	0.0367	12608	9.442	0.0076	0.5826	0.0605
Bank 11	2015	0.0050	174	5.159	0.2416	0.6173	0.0341
	2014	0.0092	11	2.398	0.2094	0.5889	0.0312
	2013	0.0200	44	3.784	0.2349	0.5759	0.0374
Bank 12	2015	0.0031	5711	8.650	0.1146	0.6523	0.1649
	2014	-0.0187	858	6.755	0.0743	0.6110	0.0917
	2013	-0.0065	714	6.571	0.0667	0.6470	0.0685
Bank 13	2015	0.0244	104621	11.558	0.0153	0.6872	0.0432
	2014	0.0293	9859	9.196	0.0201	0.6133	0.0460

	2013	0.0286	8047	8.993	0.0255	0.6422	0.0463
Bank 14	2015	0.0356	319	5.765	0.0647	0.3643	0.2733
	2014	0.0266	10	2.303	0.0844	0.5298	0.3974
	2013	0.0259	63	4.143	0.0491	0.4890	0.3667
Bank 15	2015	-0.0077	6386	8.762	0.2328	0.6992	0.1775
	2014	0.0330	765	6.640	0.2558	0.6391	0.0993
	2013	0.1168	709	6.564	0.0265	0.6379	0.0480
Bank 16	2015	-0.0092	32864	10.400	0.0575	0.5405	0.0938
	2014	0.0071	6975	8.850	0.0575	0.5333	0.0588
	2013	0.0120	4695	8.454	0.0764	0.4275	0.0455
Bank 17	2015	0.0072	151	5.017	0.0615	0.4748	0.1104
	2014	0.0130	14	2.639	0.0205	0.5033	0.0780
	2013	0.0122	38	3.638	0.0223	0.5206	0.0764
Bank 18	2015	0.0161	2065	7.633	0.0957	0.6362	0.1272
	2014	0.0123	109	4.691	0.0977	0.5869	0.1174
	2013	0.0164	258	5.553	0.1035	0.5327	0.1065
Bank 19	2015	0.0195	32306	10.383	0.0769	0.6552	0.0841
	2014	0.0325	6642	8.801	0.0721	0.6616	0.0491
	2013	0.0280	3590	8.186	0.0899	0.6868	0.0696
Bank 20	2015	0.0311	18	2.890	0.0462	0.6315	0.0071
	2014	0.0316	39	3.664	0.0910	0.6267	0.0091
	2013	0.0291	27	3.296	0.0607	0.5409	0.0142