

**EFFECT OF CREDIT REFERENCE BUREAUS ON THE PROFITABILITY OF  
COMMERCIAL BANKS IN KENYA**

**KENNETH KIMATHI RIUNGU**

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THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF  
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## **DECLARATION**

I declare that this project proposal is my original work and has not been submitted for an award of a degree in any other university for examination/academic purposes.

Signature.....

Date.....

**Riungu Kenneth Kimathi**

**D63/79691/2012**

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

Signature.....

Date.....

**DR J. O. ADUDA**

## **DEDICATION**

This work is dedicated to my mum. Because of your endless love and prayers, this was possible.

## **ACKNOWLEDGEMENT**

Special thanks go to my supervisor Dr. Josiah Aduda for his guidance, commitment and encouragement which enabled me to complete this research project. My wife Hannah for the unwavering support, sacrifice and encouragement, I will forever be grateful,. My family for the love, prayers and unshakable faith in me. My classmates for enriching my knowledge and bringing a light touch to the serious task we were undertaking. Thank you and God bless you.

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## **ACRONYMS & ABBREVIATIONS**

CRB	-	Credit Reference Bureaus
CIS	-	Credit Information Sharing
CBK	-	Central Bank of Kenya
GDP	-	Gross Domestic Product
KCB	-	Kenya Commercial Bank
NPL	-	Non Performing Loan
SPSS	-	Statistical Package for Social Sciences

## **ABSTRACT**

The purpose of the study was to examine the effect of credit reference bureaus on profitability of commercial banks in Kenya. The study adopted a causal comparative descriptive research design and used secondary data for analysis. The target population consisted of 44 commercial banks in Kenya. The study concludes that credit reference bureau services assist in reducing the incidence of non-performing loans and hence in improving the bank profitability. This is made possible through the reduction of transaction costs, enhanced information sharing, reduced loan loss and delinquency, and enhanced credit evaluation practices due to credit reference bureau services are used. The study recommends that banks should continue to utilize the credit reference bureau services as it enhances their profitability. The service lowers the risks involved in identifying suitable clients that the bank can advance loans to. Further studies should incorporate measures of GDP as they greatly affect profitability and also determine client perception on CRB.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

According to Cavelaars and Passenier (2012), until the 1960s obtaining a loan required a face-to-face application procedure with a bank employee in whom one had to explain the purpose of the loan and demonstrate one's creditworthiness. Over time, the development of credit bureaus and credit scoring models enabled banks to obtain information about individual consumer's credit records even though they had no prior relationship with them. Therefore credit referencing not only helps lower transaction costs but also facilitate distant transactions such as, for instance, e-finance or internet transactions and banking.

There has been dramatic increase in competition in traditional and non-traditional institutions in the financial services industry with a decline in consumer loyalty Paswan, Spears, Hasty & Ganesh, (2004). Lending based on hard-information may outperform lending based on relationship-based soft-information, especially in long-distance situations Cavelaars& Passenier, (2012). However, information sharing occasioned by credit reference bureaus has led to increased competition among banks resulting in a decline in monopoly rents for banks, to the benefit of the bank's customers and society as a whole. Lenders use credit reference databases in order to evaluate a consumer's credit application and his/her creditworthiness.

According to Idun and Aboagye (2014) in a Ghanaian study recommends encouraging a more competitive banking system with more innovative products tailored toward mobilization of savings and investment to growth induced sectors of the economy. Thus as the credit reference practices get firm foothold in the financial industry, credit data can be used for various ends. Importantly, such data have been considered to promote transparency and reduce the information advantage that a lender has over its existing clients, which in turn could lead both to lower prices offered to consumers and greater access to credit. Since information is very vital for the efficient functioning of the credit markets Ferretti, (2006), existence of asymmetric information between borrowers and lenders poses problems of bad debts, moral hazard and adverse selection.

### **1.1.1 Credit Reference Bureaus**

Credit Reference Bureaus (CRBs) are private companies that compile databases that potential lenders can access to help them evaluating a consumer's credit application. They provide information to potential lenders about an applicant's credit record, producing a “credit report” that contains details of the payment and credit history of an individual, financial accounts and the way they have been managed, as well as other information of interest to the credit industry Ferretti, (2006).

Credit Reference Reports help banks stem out misconducts in the banking sector since customers whose credit reports indicate as having been involved in malpractices are subjected to stringent terms and conditions. This is also expected to help banks suppress the levels of Non- Performing Loans while increasing their loan books. Credit

information sharing to bank customers, is expected to minimize the problem of information asymmetry in the financial sector. Information asymmetry between banks and borrowers is one of the main contributors to high cost of credit. Thus banks tend to load a risk premium to borrowers because of lack of customer information. This in turn, increases cost of borrowing, meaning repayment of loans escalate which translates to a high level of default. The Credit Information Sharing (CIS) apparatus is therefore expected to facilitate the development of information capital to reduce information asymmetry or increase information symmetry and allow cost of credit to decline substantially. It is therefore the Central Bank's expectation that savings arising from the sharing of credit information will translate to lower cost of credit. According to CBK, (2010) Credit Reference bureaus (CRB) complement the fundamental role played by banks and other financial institutions in extending financial services within an economy. CRBs assist lenders to make faster and more accurate credit decisions. They collect, manage and disseminate customer information to lenders in the form of credit reports. These credit reports will help lenders to decide whether to extend an applicant's loan, credit card overdraft facility or extend any other product, which is reliant on customer's ability to repay at a determined cost.

### **1.1.2 Profitability of Commercial Banks**

Profitability is the state of yielding a financial gain. It is the capacity to make a profit whether accounting or economic. Profitability is a primary goal of any business venture without which the business cannot survive in the long run. It measured using income and expenses, income being money generated from the activities of the business for example

interest income for banks and expenses being costs incurred or resources consumed by the activities of the business for example interest paid on deposits by banks. Profitability is measured using an income statement and it is the most important measure of business success. Increasing profitability therefore is one of the most important tasks of business managers. It is for this reason therefore that they are constantly looking for ways to change their businesses and consequently increase profitability and hence the adoption of policies such as the use of CRBs or the credit information sharing initiative which have the ultimate goal of increasing banks profitability by reducing losses through loan defaults.

Research on the determinants of banks' profitability has been attentive to both the returns on bank assets and equity and net interest rate margins. It has conventionally explored the impact on banks' performance of bank-specific factors, such as risk, and regulatory costs market power, Credit risks and operating inefficiencies explain most of the disparities in net interest margins and thus profitability Al-Haschimi(2007). Enhancement of bank profitability requires new standards in risk management and operating efficiency which crucially affects profits Athanasoglou, et al. (2006). In the presence of asymmetric information, a well-capitalized bank is less risky but profits are lower since they are perceived as safer. However Athanasoglou, et al. (2005b) finds a positive and significant effect of capital on bank profitability where capital is regulated and therefore acts as a binding restriction.

Bank profitability and bank interest margins can be seen as indicators of the efficiency or inefficiency of the banking system, as they drive a wedge between the interest rate

received by savers on their deposits and the interest paid by borrowers on their loans Kunt et al., (2001). Profitability measure seems to be most significant for stockholders of a bank since it reveals what the bank is earning on their investments Rasiah, (2010). Two types of interest influence the profitability of a bank, interest expenses and interest income. Interest expenses and interest income affect net interest income and therefore bank profitability. Rasiah, (2010), Loans are the bank's assets whereas the deposits are the bank's liabilities. Though there are numerous other sources of income for banks such as account maintenance fees, cheque clearance fees, over the counter and ATM withdrawal charges etc, interests charged on bank loans are expected to be the main source of income and are expected to have a positive and greatest impact on a commercial banks' performance Bennaceur et al. (2008).

### **1.1.3 Credit Reference Bureaus and Commercial Banks**

In establishing the Credit Reference Bureaus, what needed to be done first was to convince banks and other financial institutions that if one institution benefits, they all benefit Leonard, (1996). Customers are then well served and, consequently, receive products that they can afford. Thus there will be fewer loan losses, as the credit institutions loan money responsibly, and then fewer write-offs. In the end, much as with the fraud detection models, savings can be passed on to customers in the form of lower interest rates and better customer service. However, Cavelaars and Passenier (2012) cautions that although individual banks may find it hard to resist following these trends as a result of market pressure, such an increased homogeneity of business models may augment the vulnerability of the banking sector as a whole.



The individual financial institutions can use the information from the CRBs for credit scoring and evaluating client credit worthiness. The process of modeling the variables important in the extension of credit is referred to as credit scoring Leonard, (1995). Based on statistical analysis of historical data of the customers, certain financial variables are determined to be important in the evaluation process of a credit applicant's financial stability and strength. This analysis produces coefficients which are translated into score weights. Subsequently, information on these important variables is obtained for new bank customers. An overall score for these new applicants is produced by adding the weighted scores which were generated from the responses to the different variables. If this overall score is above a predetermined cut-off point, the loan applicant receives a certain line of credit. If not, the applicant is denied credit.

#### **1.1.4 Commercial Banks in Kenya**

Commercial banks are financial institutions that are authorized by law to receive money from businesses and individuals and lend money to them. They are open to the public and serve individuals, institutions and businesses. They are mainly established with the aim to make a profit by carrying out these activities. Their operations are licensed, supervised and regulated by the central bank. There are currently about forty four commercial banks in Kenya categorized in as large, mid tier and small commercial banks and are privately or publicly owned. The banking sector in Kenya experienced problems leading to closure of 37 banking institutions between 1986 and 1998. Part of the problems was the poor credit asset performance that resulted in liquidity crises and closure of the banks. The need to introduce credit referencing as a risk management tool was identified by Kenyan

lenders as necessary to create a vibrant and globally competitive financial sector. Following remarkable efforts and support of the Central Bank of Kenya (CBK), Kenya Bankers Association (KBA), and Financial Sector Deepening Trust (FSD–Kenya), a successful roll out of the credit information sharing mechanism amongst banks was officially launched in July 2010.

The Credit Bureau Regulations were issued following the amendment to the Banking Act passed in 2006 that made it mandatory for the Deposit Protection Fund and institutions licensed under the Banking Act to share information on nonperforming loans through credit reference bureaus licensed by the Central Bank of Kenya. Subsequently, this informed the enactment of the Banking (Credit Reference Bureau) Regulations 2008 which provides that the information to be shared among the banks is any customer information concerning their customers' non-performing loans (NPLs) as well any other adverse information relating to a customer (negative information). Presently, the central bank of Kenya has licensed two credit reference bureaus; Metropol CRB and CRB Africa Ltd to offer banking sector credit information sharing services in Kenya. This move has resulted in sustained growth and performance with the banking sector collectively registering impressive performance Nyamongo&Temesgen, (2013).

One of the key indicators of the success of credit market is the proper and effective credit reference bureaus which includes the availability of quality information, affordable credit facilities, and quality of assets; measured as a proportion of net non-performing loans to gross loans, in this case, stock of gross non-performing loans declining, leading to decline

on provision for bad debts and hence profitability. Credit Reference Bureaus are a typical response to information asymmetry problems between lenders and borrowers. However, how the sharing of borrower information among the banks influenced the profitability performance of the banks in Kenya has not been empirically examined.

## **1.2 Research problem**

Credit risk models are used by banks to calculate the credit loss for a given time horizon. The output of these models is a portfolio loss distribution which describes the potential credit losses and their probabilities. To estimate credit loss, there is need to establish the portfolio value today and at the end of the time horizon. There are two conceptual approaches to measuring credit loss. In the default mode paradigm, a credit loss occurs only when there is an actual default. The credit loss is nothing but the difference between the exposure-at-default and the recovery value. In the mark-to-market paradigm a credit loss occurs if the borrower defaults or if the borrower's credit quality deteriorates Braverman and Guasch, (2006). The credit risk strategy should encompass the need to maintain sound credit quality, profits and business growth for the business to be profitable. Therefore, there is need to decide on what risk/reward relationship is acceptable for their business after taking into account resource and capital costs.

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 bureaus was to provide up to date

access, accurate and instant information on potential borrower customers making it easier and more cost efficient to assess and manage risk, reducing the engagement in bad business and resulting in improved client portfolio quality and profitability. In the Kenyan Milieu few aspects relating to Credit Reference Bureau have been reviewed. Sigei (2010) evaluated the effectiveness of CRB in Kenya, Nganga (2011) investigated stakeholder perception of credit reference bureau services in the Kenyan credit market, Gaitho (2010) studied the role of credit reference bureau on credit access, and Mumi (2010) appraised the impact of credit reference bureau in financial institutions in Kenya; The effect of CRB on profitability of banks however has only been inferred as a proxy measure of financial performance but has not been subjected to empirical studies. This study attempts to bridge the knowledge gap regarding the performance of the bureaus in relation to the benefits they were anticipated to provide to the financial sector with a specific focus to Nakuru County. In particular, it seeks to answer the following research what is the effect of Credit reference bureau on profitability of commercial banks in Kenya?

### **1.3 Objectives of the study**

#### **1.3.1 Main Objective**

The main objective of the study is to investigate the effect of credit reference bureaus on the profitability of commercial banks in Kenya.

### **1.3.2 Specific Objectives**

1. To ascertain how transaction costs reduction as a result of adoption of CRB's initiatives influence bank profitability
2. To determine how competitive information sharing as a result of adoption of CRB's initiatives influence bank profitability
3. To assess how loan loss and delinquency reduction as a result of adoption of CRB's initiatives influence bank profitability
4. To establish how credit evaluation practices as a result of adoption of CRB's initiatives influence bank profitability

### **1.4 Value of the Study**

The study will be of benefit to various stakeholders in the financial industry including the bank managers, credit reference bureaus management, investors, bank clients and the general public since it will provide insights on how credit reference practices are related to bank profitability. The researcher hopes that the result of the research will be useful to the management and especially organizations that have not improved in micro-finance credit provision due to poor credit risk management practices so that they understand how credit risk management practices will be useful in their day to day activities. The study will also help solve the problems faced by customers and banks on the challenges they experience when trying to improve credit risk management practices.

The result of this research will enable the management to adjust its strategies in the implementation of suitable strategies to improve on their credit risk management practices. This will be of benefit in ensuring that the general performance is improved.

The findings of this study will provide customers and employees with some understanding on the importance of effective credit risk management practices in enhancing credit provision. The Staff of financial institutions will be able to focus on quality client selection and carry out feasibility analysis for prospective borrowers with the background of credit provision. The Government can use this research especially in the impending Micro finance bill to moderate the policies of micro lending as the level of client rotation has a direct bearing on the socio-economic standards and activities of the active poor, who contribute the greatest percentage of the population in developing countries. The findings of the study will also trigger other researchers to conduct a study on the same or as a criticism.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter provides a review of literature on credit reference bureau practices, theoretical framework, and empirical studies on CRB and bank profitability. The chapter will also include the conceptual framework and critique of existing literature.

#### **2.2 Review of Theories**

This section discusses the theories related to credit provisions by banks. Its objective is to use the theories to underpin the lending practices employed by banks. The theories under discussion are the Adverse Selection Theory, the Moral Hazard Theory and the Financial Sustainability Model.

##### **2.2.1 Adverse Selection Theory**

Pagano and Jappelli (1993) show that information sharing reduces adverse selection by improving banks information on credit applicants. The theory of asymmetric information tells us that it may be difficult to distinguish good from bad borrowers (Auronen, 2003) in Richard (2011), which may result into adverse selection and moral hazards problems. The theory explains that in the market, the party that possesses more information on a specific item to be transacted (in this case the borrower) is in a position to negotiate optimal terms for the transaction than the other party (in this case, the lender) (Auronen, 2003) in Richard (2011). The party that knows less about the same specific item to be transacted is therefore in a position of making either right or wrong decision concerning

the transaction. Adverse selection and moral hazards have led to significant accumulation of non-performing loans in banks (Bester, 1994; Bofondi and Gobbi, 2003).

### **2.2.2 Moral Hazard Theory**

The moral hazard problem implies that a borrower has the incentive to default unless there are consequences for his future applications for credit. This result from the difficulty lenders have in assessing the level of wealth borrowers will have accumulated by the date on which the debt must be repaid, and not at the moment of application. If lenders cannot assess the borrowers' wealth, the latter will be tempted to default on the borrowing. Forestalling this, lenders will increase rates, leading eventually to the breakdown of the market Alary and Goller (2001).

### **2.2.3 Financial Sustainability Models**

Classic microeconomic theory suggests that financial sustainability can be modeled through a 'Marginal-Revenue-Marginal-Cost' approach (Jackson & McConnell, 1980). The means for determining the behavior, including viability, of a competitive entity is to calculate and compare, at each price level, amounts that each additional unit of output would add to total revenue on the one hand, and to total cost on the other. That is, in comparing the marginal revenue and the marginal cost of each successive unit of production, any unit whose marginal revenue exceeds marginal cost should be produced and any unit marginal cost whose exceeds marginal revenue should not. The equilibrium point where marginal revenue equals marginal cost is the key to the output-determining



rule that suggests the entity will maximize profits or minimize losses by producing at that point where marginal revenue and marginal cost equals (Jackson & McConnell, 1980).

Assuming that price is determined by the broad market forces of supply and demand, as is the case for pure competition, an entity will remain financially sustainable by maximizing profits or minimizing losses in the short run by producing outputs at which marginal revenue equals marginal cost if, and only if, marginal revenue is greater than minimum average variable cost (AVC). Here, average variable cost is the total of all variable costs i.e., those that vary with output like labour, materials, power, divided by output (Jackson & McConnell, 1980). If marginal revenue falls short of minimum average variable cost, the entity will minimize its losses in the short run by closing down. In this case, there is no level of output at which the entity can produce and realize a loss smaller than its fixed costs and it is therefore considered financially unviable (Jackson & McConnell, 1980). Note that this assumes the absence of any subsidization over time to ride 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**

Demirgüç-Kunt and Huizinga (1999), Cavallo and Majnoni (2001), Bennaceur (2003), Bikker and Metzmakers (2004), Davis and Zhu (2005) Toni Uhomoibhi (2008) according to Devinaga Rasiah (2010) divide the determinants of commercial banks performance and profitability into two categories that is, the Internal and the External factors. In this study our Interest would be internal factors since CRB practices are confined in improving Banks internal efficiency. Husni (2011) posits that internal determinants of banks profitability normally consists of factors that are within the control of commercial banks which are the factors that affect the revenue and the cost of the banks. Some readings classify them into two categories namely the financial statement variables and non-financial variables. The financial statement variables comprise factors that are directly related to bank's balance sheet and income statement. Whiles, the non-financial statement variables take in factors, like the number of branches of a particular bank, location and size of the bank etc.; Haron, Sudin (2004). Rasiah (2010) opined that banks generate income mostly on their assets and the assets could be termed as income and non-income generating. With regards to commercial banks income Rasiah classified it into two, specifically interest and non-interest income.

The interest income consist of rates charge on loans, overdraft and trade finance which the banks offers to customers. While, the non-interest income comprises of fees, commissions, brokerage charges and returns on investments in subsidiaries and securities. According to Vong et al (2009), the major source of banks revenue is interest income. It contributes about 80% of commercial banks earnings. The other sources of banks revenue

consist of dividends and gains from trade in the securities market. There could be also some slight sources of income for instance earnings from trust activities and service charges on deposit accounts; Vong et al (2009). One of the major roles of banks is to offer loans to borrowers and loans serve as one of the ultimate source of earnings for commercial banks. In other words loans represent one of the highest yielding assets on banks' balances sheet. It is evident that the more banks offer loans the more it does generate revenue and more profit.

Abreu & Mendes, (2000). However, banks have to be courteous in offering more loans because as they offer more loans to customers they expose themselves to liquidity and default risks which impacts negatively on banks' profits and survival Rasiah (2010). Husni (2011) discloses that interest margin on loans provided by the banks in Jordan is not only a significant driver of profitability but also poses a positive relationship with profitability. This is harmonized with a citation made by Vong et al (2009) on findings of Abreu and Mends (2000) which shows a positive relationship between the loan ratio and profitability. Rivard and Thomas (1997) that bank profitability is may be best measured by Returns on assets (ROA) since ROA cannot be distorted by high equity multiplier. This study therefore will use (ROA) hence returns on total assets to measure Profitability of the banks. Returns on signifies managerial efficiency in actual sense, that is it depicts how effective and efficient the management of banks has been as they seek to transform assets into earnings. The ROA is defined as net income divided by total assets.

## **2.4 Review of Empirical Studies**

This section reviews the findings of empirical studies done on the impact of CRBs on transaction costs of lending, firm competitiveness, loan loss and delinquency and evaluation of credit worthiness.

### **2.4.1 Transaction costs**

Transaction costs refer to the cost of carrying out a transaction by means of an exchange on the open market and are associated to the division of work Rotke and Gentgen, (2008). In empirical studies, transaction costs are not directly measured, but rather proxies such as uncertainty, transaction frequency, asset specificity, opportunism and so on are used instead. These are believed to critically affect the costs of transactions Pessali, (2006). Transaction costs reflect the costs of economic organization both outside and inside the firm and are one means by which one can measure the efficiency of different institutional designs in achieving economic outcomes in particular environments Polski & Kearney,(2001). Many governments and international financial institutions have tried to address the problems of high transaction costs (A.P.E.I.S, 2007). Therefore the existence of transaction costs in loan market implies that financial institutions must become more actively involved in monitoring activities and strategic behavior of firms because financial institutions invest substantial amounts of funds in business firms Williamson, (1985).

Brown and Zehnder (2007) in studies carried out to establish whether CRBs encourage borrowers to repay loans as a result of reduced transaction costs when they would

otherwise default establishes this to be the case. Credit sharing through the use of CRBs enables lenders to reduce on the lender risks and by extension charge lower interest rates. This results in more affordable loans to customers who in turn are less likely to default. Analysis of credit bureau data confirms that credit reporting reduces the selection costs for lenders by allowing them to more accurately predict individual loan defaults.

The impact of information sharing on the level of non-performing loans has been tested by two cross - country studies. Based on their own survey of credit reporting in 43 countries, Jappelli and Pagano (2002) show that bank lending to the private sector is larger and default rates are lower in countries where information sharing is more solidly established and extensive. This is because lending institutions are more confident of their customers based on their credit history which is readily available from the credit reference bureaus in those countries. The borrowers are also less likely to default knowing that doing so will affect their future ability to borrow. They therefore make every effort to repay the loans.

According to a credit referencing survey done in Rwanda by ( ), the interoperability of electronic financial services greatly contribute to simplifying business transactions and promote greater efficiency, effectiveness, convenience and availability of instruments to businesses and individuals in Rwanda. A study by Getenga (2007) revealed that the presence of CRBs reduces the information monopoly of a lender on its borrowers, thus reducing the extra rents that lenders can charge their clients. According to Getenga

(2007), one of the features that banks deliberate when deciding on a loan credit application is the estimated chances of recovery.

According to Nalukenge (2003), transaction costs in credit markets therefore are indirect financial costs generated by various processes, including the costs of searching and collecting relevant information. They are indirect costs caused by frictions in the flow of credit funds, preventing credit markets from reaching efficient market equilibrium. Consequently transaction costs of lending consist of the costs of administering credit, coordination costs and the costs of the risk of default. It's further highlighted that administrative costs are those, which are directly attributable to the processing, delivering and administering of loans while coordination costs are those resources a financial institution dedicates to ensuring that clients adhere to terms stipulated in loan contracts Saito & Villanueva, (1981).

According to Polski and Kearney (2001), banking activities generate two types of transaction costs, which are subject to different political and economic influences. They further note that one type of transaction costs, interest expense, reflects the costs of funds for banking activities and the second type, noninterest expense, reflects the costs of information and co-ordination. Shankar (2007) went further to break down transaction costs into indirect and direct. Direct transaction costs consisting of training costs, cost of direct administrative activities and cost of monitoring. He further noted that indirect transaction costs include allocated fixed costs of the branch office, regional office and head office, depreciation and taxation costs.

The exchange of information between banks reduces the informational rents that banks can extract from their clients within lending relationships. Padilla and Pagano (1997) made this point in the context of a two period model where banks are endowed with private information about their borrowers. This informational advantage confers to banks some market power over their customers, and thereby generates a hold up problem\; anticipating that banks will charge predatory rates in the future; borrowers exert low effort to perform. This leads to high default and interest rates, and possibly to collapse of the credit market.

According to Dyer (1997), transaction cost analysis views the firm as a governance structure. However out of the many attributes describing transactions, the three main dimensions that are instructive to the study of commercial transactions are the frequency with which transactions recur, the uncertainty (disturbances) to which they are subject, and the condition of asset specificity Williamson, (1998). Asset specificity refers to a condition where the physical or human resources invested to support a particular transaction cannot be easily redeployed to alternative uses without a significant loss in value Husted & Folger, (2004); Zhao, Luo & Suh, (2004).

According to Djankov *et al.*, (2007), the private sector credit relative to GDP is positively correlated with information sharing in their study of credit market performance and institutional arrangements in 129 countries for the period 1978–2003. Firm-level data suggest that information sharing may indeed have a differential impact on credit availability for different firm types. Love and Mylenko (2003) combine cross - sectional

firm - level data from the 1999 World Business Environment Survey with aggregate data on private and public registries collected in Miller (2003). They find that private credit bureaus are associated with lower perceived financing constraints and a higher share of bank financing (while public credit registries are not), and that these correlations are particularly strong for small and young firms.

To remain competitive, CRB worldwide must not stand on their laurels; they must introduce innovative services to meet the evolving needs of their clients. For example, Compuscan Credit Reference Bureau in Uganda is currently introducing a Credit Scoring System which is intended to facilitate quicker and better decision making by the participating financial institutions Tumusiime-Mutebile, (2011). The impact of credit rating or scoring agencies on financial markets has become one of the most important policy concerns facing the international financial architecture. Ratings indicate a relative credit risk and serve as an important metric by which many investors and regulations measure credit risk.

Brown and Zehnder (2007) find empirical evidence that the lending market would collapse due to credit risk in the absence of information sharing institution and reputational banking. However, their study also showed that establishing credit reference bureaus encouraged borrowers to repay their loans by allowing lenders to identify borrowers with a good payment history. The study showed that an information sharing institution positively impacted the credit market in the following ways: Without credit reference bureaus, borrowers had a tendency to repay loans only when they planned to



maintain their current lending relationship. However, in economies with a credit information institution, borrowers had a higher chance of repaying their loans regardless of whether they were planning to continue their current lending relationship or not. Thus, it can be implied that credit sharing institutions, by documenting borrower behavior, can positively impact borrower repayment and reduce NPLs.

Financial institutions facilitate mobilization of savings, diversification and pooling of risks and allocation of resources, Collins et al.(2011). However, since the receipts for deposits and loans are not harmonized, intermediaries like banks incur certain costs Ngugi (2001). They charge a price for the intermediation services offered under uncertainty and set the interest rate levels for deposits and loans. The disparity between the gross costs of borrowing and the net return on lending defines the intermediary costs which include information costs, transaction costs, administration, default costs and operational costs Rhyne (2002). Interest rate spread is well defined by market micro-structure characteristics of the banking sector and the policy environment Ngugi (2001).

Schreiner (2001) indicates that financial institutions are facing an enormous risk of non-performing loans (NPLs) noting that larger loans have greater risk exposure, so the variable costs per-dollar is higher. If lenders don't take extra care, there could be more loan defaults. To overcome the challenge of NPLs, an institution is required to monitor the behavior of borrowers. Thus, the idea of establishing CRB was conceived in order to enable banks to determine credit worthiness of their borrowers – individuals, groups and enterprises; and therefore reduce the loan default risk. In this respect CRB assists in first,

sharing information on default among banks; secondly, eliminating corrupt borrowers – those with the aim of borrowing from different financial institutions with the aim of defaulting; thirdly, to provide commercial professional credit reference to say prospective foreign investors; and also to identify honest/credible borrowers based on known history and character.

High delinquency makes financial sustainability impossible for an institution. Portfolio at risk rates measure the outstanding balance of loans that are not being paid on time against the outstanding balance of total loans (Brown, 2006). McIntosh and Wydick (2004), conclude that credit information systems first create a screening effect that improves risk assessment of loan applicants, thereby raising portfolio quality, which in turn reduces rates of arrears. The international standard for measuring bank loan delinquency is portfolio at risk (PAR). Both the numerator and the denominator of the ratio are outstanding balances. The numerator is the unpaid balance of loans with late payments, while the denominator is the unpaid balance on all loans. The PAR uses the same kind of denominator as an arrears rate, but its numerator captures all the amounts that are placed at increased risk by the delinquency. A PAR can be pegged to any degree of lateness. PAR, a common measure among banks, captures the outstanding balance of all loans with a payment more than 90 days late.

Grosvenor et al (2010) observed that, the current global financial crisis, which began in the United States, is attributed to the August 2007 collapse of the sub-prime mortgage market and that commercial banks with greater risk appetite and that are more willing to

make loans with a higher probability of default, tend to record higher losses. Further, that the level of NPLs in the US started to increase substantially in early 2006 in all sectors. NPLs reflect credit risk for banks arising either from external factors such as depressed economic conditions, or internal factors such as poor lending decisions or both. The ratio of NPLs to assets is an indicator of a bank's asset quality and financial soundness. In the case of the current financial turmoil, a high ratio may indicate that banks are not healthy since they have significant exposure to the origins of the problem. According to Ng'etich (2001), controlling NPLs is very important for both the performance of an individual bank and the economy's financial environment

Kallberg and Udell (2003) found that historical information collected by a credit bureau had powerful default predictive power and a study by Barron and Staten (2003) showed that lenders could significantly reduce their default rate by including more comprehensive borrower information in their default prediction models. An analogous study – specific to Brazil and Argentina – found similar default rate decreases when more information was available on borrowers Powell et al. (2004). Credit markets present asymmetric information problems. Lenders know neither the past behavior and the characteristics, nor the intentions of credit applicants. This creates a moral hazard problem that causes lenders to make credit decisions based on the average characteristics of borrowers rather than on individual characteristics Rothschild and Stiglitz, (1976).

Locally, various aspects of CRB have been reviewed by various scholars. Sigei (2010) researched on evaluating the effectiveness of credit reference bureau in Kenya, The case

of KCB. His study revealed that CRBs play an important role in preventing serial loan defaulters from accessing credits from other financial institutions thus cushioning financial institutions against unforeseen credit risks, sentiments also shared by others researchers. Mumi, (2010); Gaitho(2010).Nganga (2011) carried out a study on stakeholder perception of credit reference bureau service in Kenya credit market. The study reveals that many of the borrowers do not want to be listed in CRBs and would try as much as possible to service their credit facilities so as to protect their reputation.

Galindo and Miller (2001) also provide evidence that information sharing reduces credit constraints at firm level. Examining balance sheet data of large companies in 23 countries they find a positive relation between credit access and an index of information sharing. Evidence also supports the theory that information sharing reduces moral hazard. Doblas-Madrid and Minetti (2009) find that if lenders enter credit information sharing institution, their borrowers improve their repayment performance.

One of the main tasks of commercial banks is to offer loans, and their main source of risk is credit risk, that is, the uncertainty associated with borrowers' repayment of these loans Tiffany Grosvenor et al (2010).The Banking (Credit Reference Bureau) Regulations, 2008 became effective in February 2009. The Regulations require all licensed banks to share information on Non-Performing Loans (NPLs) through a Credit Reference Bureau (CRB) licensed by CBK. The role of licensed CRBs is to collect, collate and process data received from approved sources of information and generate credit reports to be used by lenders.

Research by Armstrong, (2008) based on information from several countries across the globe show that the existence of credit registries is associated with increased lending volume, growth of consumer lending, improved access to financing and a more stable banking sector. Further, Hansen et al, (2004), highlighted that many borrowers make a lot of effort to repay their loans but do not get rewarded for it because this good repayment history is not available to the bank that they approach for new loans. Whenever borrowers fail to repay their loans, banks are forced to pass on the cost of defaults to other customers through increased interest rates and other fees. Put simply - good borrowers are paying for bad. Credit reporting allows banks to better distinguish between good and bad borrowers.

Recent theoretical research suggests a threefold effect of lenders' exchanging information on the credit history of borrowers Pagano and Jappelli, (1993). First, credit bureaus improve banks' knowledge about applicants' characteristics and permit more accurate prediction of repayment probability. This allows lenders to target and price their loans better, easing adverse selection problems. In this respect the benefit of establishing a credit bureau is greatest where each bank is confronted by a large number of customers on which it has no previous information, i.e., where borrowers are very mobile. Second, credit bureaus reduce the informational rents that banks could otherwise extract from their customers. They tend to level the informational playing field within the credit market and force lenders to price loans more competitively. Third, credit bureaus work as a borrower discipline device: every borrower knows that if he defaults his reputation with all other potential lenders is ruined, cutting him off from credit or making it much more

expensive. This mechanism also heightens borrowers' incentive to repay, reducing moral hazard.

Herausgeber (2001) observed that the use of credit risk information systems has become a topic of analysis and promotion within international organizations and national governments. He states that one of the factors limiting the access to credit for micro enterprises is the lack of information on the risk that they represent to the financial intermediaries. As a result, commercial banks need to make a bigger effort to complete the information they require in order to make decisions over the credit requests they receive, incrementing their operational costs, which are generally transferred to their customers directly or indirectly. Andrew Powell et al (2004), states that Information problems have long been at the fore of analyses of credit markets. Indeed, one rationale for banks as institutions is to gather information and establish relationships with borrowers in an effort to surmount these problems. A striking feature of banks is the amount of services that they offer and the economies of scope between them.

## **2.5 Summary of Literature Review**

The foregoing literature survey has characterized the challenges facing the lending practices of commercial banks and the emerging role of credit reference bureaus as mitigation. Lending is a challenging proposition in any setting particularly in the developing world, where legal/judicial enforcement is weak, where information about the ability and willingness to repay of applicants is not readily available and where many of the prospective lenders are from a poor household/ firms; many of whom have never before borrowed and cannot pledge collateral to guarantee repayment Gonzalez-Vega,

2003; Conning and Udry, (2007). Transaction costs reflect the costs of economic organization both outside the firm and inside the firm and are one means by which one can measure the efficiency of different institutional designs in achieving economic outcomes in particular environments Polski and Kearney, (2001). The role of the credit reference bureaus in reducing information asymmetry in the sector has also been underpinned. For example, research by Armstrong, (2008) based on information from several countries across the globe show that the existence of credit registries is associated with increased lending volume, growth of consumer lending, improved access to financing and a more stable banking sector. Further, Hansen et al, (2004), highlighted that many borrowers make a lot of effort to repay their loans, but do not get rewarded for it because this good repayment history is not available to the bank that they approach for new loans. Research on the determinants of bank profitability has been attentive on both the returns on bank assets and equity, and net interest rate margins. However, a more direct relationship between the profitability of the banks and their use of CRBs in their lending activities has not been explored especially in the local commercial banks and, thus, provides rationale for the present study.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The research methodology presents the structural outline upon which data collection and analysis is based. It presents the research design, study location, targeted population, the sample selection procedures, the instruments of data collection, pre-testing for validity and reliability, how data will be collected and analyzed.

#### **3.2 Research Design**

The study will use a Causal-Comparative descriptive survey design in evaluating Impact of CRB on profitability of commercial banks operating in Kenya. A quantitative approach will be 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 will describe and examine the main variables to measure and organize findings before validating them. The fundamental impact study question is what would have happened to firms receiving the intervention if they had not in fact received the it Causal-comparative studies attempt to identify cause-effect relationships, involve comparison, and attempts to make inferences without direct intervention. This design will be appropriate for this study because comparison will allow for the establishment of conclusive causality attributing observed changes in profitability to Credit reference bureau practices. The researcher will employ descriptive statistical analysis and methods of analyzing correlations and regressions between multiple variables.



### **3.3 Population**

Elmore et al, (2006), defines the target population as “the population from which we would want to collect data if we were conducting a complete census rather than a sample survey”. The researcher focused on 44 commercial banks in Kenya.

### **3.4 Sample**

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. All financial records about the banks will be used

### **3.5 Data Collection**

Secondary data required for this study was collected from CBK loan book, CBK annual bank supervisory reports. The data required will be collected for a period 5years, before the Introduction of CRB and 5 years after i.e. 2004 to 2013. Data to be collected will include;

- Total gross loans
- Loan loss provisions
- Non-performing loan
- Private credit to GDP
- No of credit file/reports shared

### **3.5 Data Analysis Methods**

Data analysis will use F-test to get the differential effects of the panel data for Ex-ante and Ex-post credit reference bureaus and Step-wise regression to estimate the model for the study. In the past studies by Kocenda and Vojtek (2009) as well as Hand and Henley (1997) and Steenackers and Goovaerts (1989) they suggested using stepwise selection to select characteristics to use in credit markets. Stepwise regression is a method where some of the variables are eliminated from the full model to achieve better suitability. Forward stepwise method sequentially adds variables to maximize the model's predictive accuracy.

The fit of the model is tested after addition or elimination of specific variables to ensure the model still fits the data. At each step, the variable that leads to the greatest improvement in predictive accuracy – in terms of the highest score statistic conditional upon a significance level of less than 5% can be found. When no more variables can be added to the model or eliminated from the model, the analysis is complete. Regarding the credit market this method may be relevant due to the costs related to data collection. However, the application of the model is considered to be too broad and time consuming and it could be improved by selecting only the most critical variables. The forward stepwise analysis begins with having first a model with a constant only, which is followed by adding variables one by one.

### 3.5.1 Variable Operationalization

This study has three set of variable: banks profitability which is the dependent (criterion) variable, credit Information sharing which is the Independent (predictor) variable and CRB as the moderating variable. These factors are operationalized as follows;

**Table 3.1 Dependent Variable**

Category	Proxy	Operationalization	Measures
Banks Profitability	Assets	Assets	Returns on Assets (ROA)
	Income	Profits	

**Table 3.2 Independent Variable**

Category	Proxy	Operationalization	Measures
Transaction Costs	Administrative costs	Transaction frequency	Fees Commissions Brokerage fees Number of transactions
Credit Information sharing	Default rates Lending activity Interest rates Credit registries	No of Credit reports generated	Interest rates Interest income: – Loans – Overdrafts – Trade finance
Loan/Loss Delinquency		Loan loss Provision/Total loans Private credit/GDP ratio Cost of credit/APR	Frequency of Non-performing loans Volume of Non-performing loans
Credit Evaluation Practices	Monitoring and Evaluation	Variation in loans Stability of the bank	Lending Volume Increased consumer lending

			Type of information shared
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### 3.5.2 Analytical Model

In their theoretical model, Jappelli and Pagano (1993) show that exchange of information on borrower type decreases default rates and reduces average interest rates which are indicator of credit market performance. These were formulated using a step-wise regression model. A regression analysis is a collective name for the techniques used in modeling and analysis of numerical data consisting of values of dependent variable and independent variable (Hair *et al*, 2006).

This study used the regression technique to examine the relationship between the dependent variable and independent variables. This is because the regression combines all the independent variables and detects the effect of those variables on dependent variable. Similar study by (Jappelli & Pagano, 2001) used default rates, interest rates and lending volumes to test the effects of information sharing on banks profitability

The model for the study is specified as follows;

$$P = \alpha_0 + \beta_1 TC + \beta_2 CIR + \beta_3 NPL + \beta_4 LD + \beta_5 EP + \epsilon_i$$

Where;

P = Bank Profitability which is measured by Return on Assets (ROA).

$\alpha_0$  - intercept coefficient

$\varepsilon_i$  - error term (extraneous variables)

TC –Transaction cost which is measured by operating expenses.

CIR - Competitive information sharing as measured by the APR.

LD -Loan loss and delinquency reduction measured by the default rate expressed as the NPLs/Gross loan

EP - Credit evaluation practices which is measured by lending volumes.

$\beta_1, \beta_2$ , and  $\beta_3$  = regression coefficients

### **3.7 Data Validity and Reliability**

Kothari (2004) notes that validity measures the accuracy of the instruments in obtaining the anticipated data that can meet the objectives of the study. Gay, (1992), says it is established by experts' judgment. The researcher sought the assistance of University Supervisors to review the process used to develop the test as well as the test itself, and then make a judgment about how well items represent the intended content area. Pre-testing of the research instruments was done using three subjects randomly drawn from the population before the field collection of data to determine the validity.

Piloting was done to make out items in the research instruments that are vague in bringing out the relevant information. Mugenda, (2008), assert that validity enhances reliability of an instrument. Therefore, a valid instrument is a reliable one. A reliable instrument is one which consistently produces the expected results when used more than

once to collect data from to achieve reliability the instruments will be analyzed using Cronbach's alpha, a useful and flexible tool that you can use to investigate the reliability of your language test results Brown, (2001).Orodho, (2004), recommends an r of at least 0.7 or above.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND PRESENTATION**

#### **4.1 Introduction**

This chapter consists of the analysis of the data collected from the study. The target population was the 44 banks operating in Kenya.

#### **4.2 The Rate of Response**

The data collected by the time of conducting the analysis was from 25 of the banks, representing a 56.8% response rate.

#### **4.3 Reliability**

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

#### **4.4 Research Results**

Data analysis in the form of inferential statistics was done in order to establish how each of the independent variables (transaction costs, competitive information sharing, and loan loss and delinquency reduction, credit evaluation practices as a result of adoption of CRB's initiatives) influence bank profitability. These were carried out while testing the hypotheses in line with the objectives of the study.



#### 4.4.1 Objective I: Effect of transaction costs as a result of adoption of CRB's initiatives on bank profitability

The correlation between the transaction costs and bank profitability was calculated using Pearson's Correlation in order to establish the relationship between the two variables.

The table below shows the results obtained from the analysis:

**Table 4.1: Correlation between of transaction costs and bank profitability**

		Transaction costs before CRB	Transaction costs after CRB
Bank profitability	Pearson Correlation	.233	.382**
	Sig. (2-tailed)		.000
	N	26	26

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

The correlation between transaction costs as measured by operating expenses and bank profitability before the introduction of the CRB is 0.233 while that between transaction costs and bank profitability after introduction of CRB is 0.382. This means there is a moderate positive relationship between transaction costs and bank profitability. The relationship between transaction costs and bank profitability prior to introduction of CRB was lower than the relationship between the two after introduction of the CRB.

#### **4.4.2 Objective II: To determine the impact of competitive information sharing as a result of adoption of CRB's initiatives on bank profitability**

The correlation between competitive information sharing and bank profitability was calculated using Pearson's Correlation whose results are as follows:

**Table 4.2: Correlation between Firm Size Process Factors and Audit Quality**

		APR before CRB	APR after CRB
Bank profitability	Pearson Correlation	.216*	.284**
	Sig. (2-tailed)		.000
	N	26	26

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

The correlation between competitive information sharing as measured by the APR and bank profitability before the introduction of the CRB was 0.216 while that between competitive information sharing and bank profitability after the introduction of the CRB is 0.284. This means there is a weak positive relationship between competitive information sharing and bank profitability both before and after the introduction of the CRB. However, the correlation between the two is higher after introduction of CRB than before. The results agree with those of Brown and Zehnder (2007) who found that CRBs encourage borrowers to repay loans as a result of reduced transaction costs when they would otherwise default establishes this to be the case. They also established that credit sharing through the use of CRBs enables lenders to reduce on the lender risks and by extension charge lower interest rates.

#### **4.4.3 Objective III: To evaluate the effect of loan loss and delinquency as a result of adoption of CRB's initiatives on bank profitability**

The correlation between loan loss and delinquency and bank profitability was calculated using Pearson's Correlation whose results are as follows:

**Table 4.3: Correlation between of loan loss and delinquency and bank profitability**

		NPL/GL before CRB	NPL/GL after CRB
Bank profitability	Pearson Correlation	.251**	.328**
	Sig. (2-tailed)		.000
	N	26	26

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

The correlation between loan loss and delinquency as measured by the non-performing loans to gross loan ratio and bank profitability is 0.251 before the introduction of the CRB while it is 0.328 after the introduction of CRB. This means there is a moderate positive relationship between loan loss and delinquency as measured by the non-performing loans to gross loan ratio and bank profitability.

**4.4.4 Objective IV: To determine the relationship between credit evaluation practices as a result of adoption of CRB’s initiatives and bank profitability**

**Table 4.4: Correlation between credit evaluation practices and bank profitability**

		GL before CRB	GL after CRB
Bank profitability	Pearson Correlation	.353**	.427**
	Sig. (2-tailed)		.000
	N	26	26

The correlation between credit evaluation practices as measured by lending volumes (gross loans advanced) and bank profitability was 0.353 before the introduction of the CRB while it is 0.427 after the introduction of CRB. This means there is a moderate positive relationship between loan loss and delinquency as measured by credit evaluation practices as measured by lending volumes (gross loans advanced) and bank profitability.

**4.4.5 Objective V: Effect of CRB Adoption on Bank Profitability**

To test whether the introduction of the credit reference bureau servicers has led to higher bank profitability an indicator variable was included (CRBX) that took on the dummy value of 1 after the introduction of CRB in the year 2009 and 0 for the years prior to the introduction of CRB. Since the coefficient on the variable CRBX was positive (.243) this shows that the bank profitability increased after the introduction of CRB services (Khurana et. al., 2005).

**Table 4.5: CRB effect on bank profitability**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.630	.492		3.310	.013
Bank Profitability (ROA)	-1.131E-10	.000	-.374	-.652	.535
CRBX	.243	.950	.150	.261	.802

**4.4.6 Objective VI: Relationship between transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices and bank profitability**

The researcher sought to establish the association between the independent variables and dependent variable to establish the overall significance of the relationship.

Use of regression analysis assisted in determining the relationship between transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices and bank profitability

**Table 4.6: Regression Results**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.548 <sup>a</sup>	.276	.255	1.080	1.801

a. Predictors: (Constant), OPex, APR, NPL, GL

b. Dependent Variable: Audit quality

The coefficient of determination (Adjusted  $R^2$ ) indicates the strength of the variables selected. When we have low  $R^2$ , it can be inferred that these predictor variables do not influence the dependent variable. The Adjusted  $R^2$  statistic of 0.255 indicates that the selected predictor variables (transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices) account for 25.5% of the variation in the bank profitability. This means that even though the selected predictor variables are significant in determination of the dependent variable (bank profitability) there are still quite a number of other variables that influence bank profitability that are not captured in this particular model. The Durbin-Watson statistic of 1.801 indicates that the predictor variables are not auto-correlated since it is greater than 0.8 (White, 1992).

**Table 4.7: ANOVA using Bank Profitability (ROA)**

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	127.623	4	62.341	28.656	.000 <sup>a</sup>
	Residual	205.807	238	1.066		
	Total	333.430	242			

a. Predictors: (Constant), OPex, APR, NPL, GL

b. Dependent Variable: ROA

**Table 4.8: Correlation Coefficients for the Independent Variables using Bank Profitability**

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.	95.0% Confidence Interval for B	
		Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	1.442	.145		10.956	.000	1.307	1.878
Transaction cost	.210	.035	.232	6.039	.000	.141	.278
Competitive information sharing	.020	.023	.154	.881	.378	-.024	.064

Loan loss and delinquency	.311	.030	.278	.767	.244	.153	.086
Credit evaluation practices	.371	.038	.333	9.818	.000	.297	.445

a. Dependent Variable: Bank Profitability (ROA)

The model generated from the study is:

$$P = 1.442 + .232TC + .154CIR + .278LD + .333EP$$

Where;

P = Bank Profitability which is measured by Return on Assets (ROA).

TC –Transaction cost which is measured by operating expenses.

CIR - Competitive information sharing as measured by the APR.

LD -Loan loss and delinquency reduction measured by the default rate expressed as the NPLs/Gross loan

EP - Credit evaluation practices which is measured by lending volumes.

The  $F_{Table(4,238)}$  value of 2.3719 is lower than the  $F_{calculated}$  value of 28.656 hence we fail to accept the model generated for determining bank profitability using the between transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices. It thus means that there are other factors which affect bank profitability in Kenya apart from transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practice sand which are not captured in this model.



#### **4.5 Summary of the Findings**

##### **Objective I: Effect of transaction costs as a result of adoption of CRB's initiatives on bank profitability**

The correlation between the transaction costs and bank profitability was calculated using Pearson's Correlation in order to establish the relationship between the two variables. The correlation between transaction costs as measured by operating expenses and bank profitability before the introduction of the CRB is 0.233 while that between transaction costs and bank profitability after introduction of CRB is 0.382. This means there is a moderate positive relationship between transaction costs and bank profitability. The relationship between transaction costs and bank profitability prior to introduction of CRB was lower than the relationship between the two after introduction of the CRB.

##### **Objective II: To determine the impact of competitive information sharing as a result of adoption of CRB's initiatives on bank profitability**

The correlation between competitive information sharing as measured by the APR and bank profitability before the introduction of the CRB was 0.216 while that between competitive information sharing and bank profitability after the introduction of the CRB is 0.284. This means there is a weak positive relationship between competitive information sharing and bank profitability both before and after the introduction of the CRB. However, the correlation between the two is higher after introduction of CRB than before. The results agree with those of Brown and Zehnder (2007) who found that CRBs encourage borrowers to repay loans as a result of reduced transaction costs when they

would otherwise default. They also established that credit sharing through the use of CRBs reduces the lender risks and by extension lenders charge lower interest rates.

**Objective III: To evaluate the effect of loan loss and delinquency as a result of adoption of CRB's initiatives on bank profitability**

The correlation between loan loss and delinquency as measured by the non-performing loans to gross loan ratio and bank profitability is 0.251 before the introduction of the CRB while it is 0.328 after the introduction of CRB. This means there is a moderate positive relationship between loan loss and delinquency as measured by the non-performing loans to gross loan ratio and bank profitability.

**Objective IV: To determine the relationship between credit evaluation practices as a result of adoption of CRB's initiatives and bank profitability**

The correlation between credit evaluation practices as measured by lending volumes(gross loans advanced) and bank profitability was 0.353 before the introduction of the CRB while it is 0.427 after the introduction of CRB. This means there is a moderate positive relationship between loan loss and delinquency as measured by credit evaluation practices as measured by lending volumes (gross loans advanced) and bank profitability.

**Objective V: Effect of CRB Adoption on Bank Profitability**

To test whether the introduction of the credit reference bureau servicers has led to higher bank profitability an indicator variable was included (CRBX) that took on the dummy value of 1 after the introduction of CRB in the year 2009 and 0 for the years prior to the introduction of CRB. Since the coefficient on the variable CRBX was positive (.243) this shows that the bank profitability increased after the introduction of CRB services (Khurana et. al., 2005).

**Objective VI: Relationship between transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices and bank profitability**

Use of regression analysis assisted in determining the relationship between transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices and bank profitability. The coefficient of determination (Adjusted R<sup>2</sup>) indicates the strength of the variables selected. When we have low R<sup>2</sup>, it can be inferred that these predictor variables do not influence the dependent variable. The Adjusted R<sup>2</sup> statistic of 0.255 indicates that the selected predictor variables (transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices) account for 25.5% of the variation in the bank profitability. This means that even though the selected predictor variables are significant in determination of the dependent variable (bank profitability) there are still quite a number of other variables that influence bank profitability that are not captured in this particular model. The Durbin-Watson statistic of 1.801 indicates that the predictor variables are not auto-correlated since it is greater than 0.8 (White, 1992).



## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Summary**

The Study results showed that there is a moderate positive relationship between transaction costs and bank profitability. The relationship between transaction costs and bank profitability prior to introduction of CRB was lower than the relationship between the two after introduction of the CRB as evidenced by the correlation coefficients between transaction costs as measured by operating expenses and bank profitability before and after Introduction of CRB ( $r=0.233$  and  $0.382$ ). The study found that there is a weak positive relationship between competitive information sharing and bank profitability both before and after the introduction of the CRB. ( $r=0.216$  and  $0.286$ ). A moderate positive relationship between loan loss and delinquency as measured by the non-performing loans to gross loan ratio and bank profitability before and after adoption of CRB was also found which was evidenced by ( $r=0.251$  and  $r=0.328$ ). The research also showed that a moderate positive relationship exists between credit evaluation practices as measured by lending volumes (gross loans advanced) and bank profitability ( $r=0.353$  before the introduction of the CRB and  $r=0.427$  after the introduction of CRB). Overall the research showed that credit reference bureau servicers has led to higher bank profitability evidenced by a positive coefficient ( $r=0.243$ ) ex post condition

## **5.2 Conclusions**

Objective I was to determine the effect of transaction costs as a result of adoption of CRB's initiatives on bank profitability. The results show that the relationship between transaction costs and bank profitability prior to introduction of CRB was lower than the relationship between the two after introduction of the CRB. This shows that CRB has improved the transaction costs by banks.

Objective II was to determine the impact of competitive information sharing as a result of adoption of CRB's initiatives on bank profitability. The results show that there is a weak positive relationship between competitive information sharing and bank profitability both before and after the introduction of the CRB. However, the correlation between the two is higher after introduction of CRB than before.

Objective III was to evaluate the effect of loan loss and delinquency as a result of adoption of CRB's initiatives on bank profitability. It was shown that there is a moderate positive relationship between loan loss and delinquency as measured by the non-performing loans to gross loan ratio and bank profitability.

Objective IV was to determine the relationship between credit evaluation practices as a result of adoption of CRB's initiatives and bank profitability. The results established that there is a moderate positive relationship credit evaluation practices as measured by lending volumes (gross loans advanced) and bank profitability.

The overall objective was to identify the effect of CRB Adoption on Bank Profitability. Since the coefficient on the variable CRBX (dummy variable) was positive (.243) this shows that the bank profitability increased after the introduction of CRB services (Khurana et. al., 2005).

The researcher also sought to establish the relationship between transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices and bank profitability. Since the F calculated value is more than the F table value this means that we fail to accept the model generated and conclude that there are other factors which affect bank profitability in Kenya apart from transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices and which are not captured in this model.

The study concludes that credit reference bureau services assist in reducing the incidence of non-performing loans and hence in improving the bank profitability. This is made possible through the factors of transaction costs, competitive information sharing, loan loss and delinquency, credit evaluation practices that are enhanced when the credit reference bureau services are used.

### **5.3 Policy Recommendations**

Based on the findings the study recommends that banks should continue to utilize the credit reference bureau services as it enhances their profitability. The service reduces transaction costs involved in identifying suitable clients that the bank can advance loans to. The study recommends that since adoption of CRBs reduces transaction costs and indeed borrowing costs ultimately government needs to craft policies to oblige all lending institutions to adopt credit referencing as this will benefit the populace through reduced interest rates, banks will also benefit from reduced information asymmetry and non-performing loans.

To enhance credit information sharing, information access should be available at low or no cost and this would be facilitated by creating an environment that supports more competitive information sharing both financial and non-financial institutions should be allowed access to credit histories of borrowers.

Central bank should regulate the credit reference bureaus to give up to date information about borrower's history which may increase their effectiveness and eventually would reduce information asymmetry and translate into reduced adverse selection.



#### **5.4 Limitations to the Study**

Credit reference bureaus have only been in existence for five years and while most commercial banks have embraced them, the general public is yet to fully understand them and appreciate they stand to gain from their operations in the long. Some lending institutions are also yet to fully embrace CRBs. A longer time period would be required for a good and dynamic analysis.

There is inconsistency in the way banks calculate their transaction costs, the research however included firms with available financial statements that clearly reflected administrative costs.

The researcher run into problems of time as the study was carried out within a short period. A longer time period would have been ideal as it would have given the researcher ample time to collect data from more target institutions. Yet the researcher countered this limitation by covering at least 25 banks out of the 44 banks to enable inference of the study findings.

#### **5.5 Suggestions for Further Research**

The study recommends that further research can be carried out to incorporate wider economic conditions in the country such as through the measure of GDP in order to establish whether the bank profitability is also affected by the same even as the banks utilize the services of the CRBs.

Another study may be carried among bank clients to determine their perception of the introduction of CRB and especially if they feel that it unduly affects them through delays and increased operational costs. Some have also fallen victims due to lack of information or knowledge, a challenge that can be eliminated by educating the bank clients and the general public since these are the main targets of these services.

Another study area may be to investigate the criteria used by various CRBs to evaluate bank clients. Longitudinal panel studies spanning a ten year period before and after adoption should be done to bring out the real impact of CRB adoption on financial performance of the banking sector.

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## **APPENDICES**

### **Appendix I: List of Commercial Banks in Kenya**

1. African Banking Corporation Ltd
2. Bank of Africa Kenya Ltd
3. Bank of Baroda (K) Ltd
4. Bank of India
5. Barclays Bank of Kenya Ltd
6. CFC Stanbic Bank Ltd
7. Charterhouse Bank Ltd
8. Chase Bank (K) Ltd
9. Citibank N. A Kenya
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 Kenya Ltd
16. Dubai Bank Kenya Ltd
17. Ecobank Kenya Ltd
18. Equatorial Commercial Bank Ltd
19. Equity Bank Ltd
20. Family Bank Ltd
21. Fidelity Commercial Bank Ltd



22. Fina Bank Ltd
23. First Community Bank Ltd
24. Giro Commercial Bank Ltd
25. Guardian bank Ltd
26. Gulf African Bank Ltd
27. Habib Bank A.G Zurich
28. Habib Bank Ltd
29. Imperial Bank Ltd
30. I & M Bank Ltd
31. Jamii Bora Bank Ltd
32. Kenya Commercial Bank Ltd
33. K-Rep Bank Ltd
34. Middle East Bank (K) Ltd
35. National Bank of Kenya Ltd
36. NIC Bank Ltd
37. Oriental Commercial Bank Ltd
38. Paramount Universal Bank Ltd
39. Prime Bank Ltd
40. Standard Chartered Bank Kenya Ltd
41. Trans-National Bank Ltd
42. UBA Kenya Bank Ltd
43. Victoria Commercial Bank Ltd
44. Housing Finance Ltd

## **Appendix II: List of Commercial Banks whose Financial Records were Available**

1. Barclays Bank of Kenya Ltd
2. CFC Stanbic Bank Ltd
3. Chase Bank (K) Ltd
4. Commercial Bank of Africa Ltd
5. Consolidated Bank of Kenya Ltd
6. Co-operative Bank of Kenya Ltd
7. Credit Bank Ltd
8. Diamond Trust Bank Kenya Ltd
9. Dubai Bank Kenya Ltd
10. Ecobank Kenya Ltd
11. Equatorial Commercial Bank Ltd
12. Equity Bank Ltd
13. Family Bank Ltd
14. Fidelity Commercial Bank Ltd
15. First Community Bank Ltd
16. Imperial Bank Ltd
17. I & M Bank Ltd
18. Kenya Commercial Bank Ltd
19. K-Rep Bank Ltd
20. National Bank of Kenya Ltd
21. NIC Bank Ltd
22. Prime Bank Ltd

23. Standard Chartered Bank Kenya Ltd

24. Trans-National Bank Ltd

25. Housing Finance Ltd