

## STRATEGIC ROLE OF CREDIT REFERENCING BUREAU ON CREDIT RISK MANAGEMENT OF COMMERCIAL BANKS IN KENYA

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### ABSTRACT

The need for establishment of CRB services in any financial system arises because of information asymmetry between lenders and borrowers. The study aims to assess the strategic role of credit referencing bureau on credit risk management of commercial banks in Kenya. It was guided by four objectives: To determine the influence of credit information sharing on the credit risk management of commercial banks in Kenya; To establish the effect of credit scoring on the credit risk management of commercial banks in Kenya; To analyze the role of the reduced moral hazard on the credit risk management of commercial banks in Kenya; To establish the effect of loan portfolio diversification on the credit risk management of commercial banks in Kenya. The study was guided by four theories namely; Theory of Asymmetric Information; Adverse Selection Theory; Moral Hazard Theory; Information Theory of Credit; Power Theory of Credit. The study will adopt a descriptive research design and The researcher targets the 30 locally owned banks to accommodate heterogeneity of the bank functions and the similarity of the credit policy since they are all governed locally by CBK. The study targeted employees in the credit departments and more specifically the employees in the credit administration unit, consumer credit unit, corporate banking, business banking and personal banking of Equity Bank, The Kenya Commercial Bank, Jamii Bora Bank, Equatorial Commercial Bank and the Co-

operative bank of Kenya. The sample size for the study was 393 employees. This study adopted Cluster sampling technique. Both descriptive and inferential statistics was adopted for the study. The quantitative data was analyzed by using descriptive statistics which includes frequency distribution tables and measures of central tendency (the mean), measures of variability (standard deviation) and measures of relative frequencies. The inferential statistics included a regression model which established the relationship between variables. Data will be analyzed by the use of a statistical software SPSS version 20. Data was presented in the form of tables and charts. Looking at the variables collectively, it's evident from the table that 59.2% of variance in the credit risk management practices by Commercial banks. 59.2% of the variations in the credit risk management practices by Commercial banks can be explained by the identified independent variables: Credit Information Sharing, Credit Scoring, Reduced Moral Hazard, and Loan Portfolio Diversification.

**Keywords:** *Credit information sharing; Credit scoring, Moral hazard, Loan portfolio diversification, Risk management*

## INTRODUCTION

Lending has been and still is the mainstay of financial institutions and this is more true to emerging economies of developing countries where capital markets are not well developed. To most of the transition economies, lending activities has been a controversial and difficult matter. This is because business firms on one hand are complaining about lack of credit and excessively high standards set by financial institutions, while financial institutions on the other hand have suffered large losses on bad loans.

The Kenyan banking sector has faced major crisis since independence leading to collapse of several banks. For example, 12 banks collapsed between 1984 and 1989, a further 19 banks were affected by bank failures between 1993 and 1995, 1998 saw the collapse of 6 banks and the period between 2000 to 2005 saw the collapse of a further five banks and non-banking institutions (Gichimu,2013). One of the reasons for the banking crisis and failures is the nonperforming loans (Alloyo, 2013). 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. (Angulin&Scapens, 2000) in their study indicated that it is difficult to have accurate information on the financial ability of prospective borrowers and even more difficult to have accurate information on their credit history. This makes it extremely difficult for the lenders to assess the credit worthiness of potential borrowers and their ability to pay the loans

According to (Sinare, 2008), Credit References Bureaus are information brokers, providing creditors with reliable, relevant and comprehensive data on the repayment habits and current debt of their credit applicants. Under reciprocity agreements, credit bureaus obtain data from creditors and other sources, consolidate and package information into individual reports, and distribute it to creditors for a fee. (Lewis,2004) indicated that most banks and most creditors prefer hard

collateral-based credit but would extend cash flow- based credits if they can use a reliable and inexpensive system to exchange information on the character and ability to pay of borrowers. The need for establishment of CRB services in any financial system arises because of information asymmetry between lenders and borrowers (Paydaycash, 2010).

Since the roll out of CRB in Kenya in July 2010 and banks submitted credit information to the licensed credit reference bureau in August 2010, commendable progress has been made so far. Banks have also started accessing credit reports from the licensed bureau for credit appraisal purposes. Since August 2010, banks have accessed 1,306,439 reports from licensed credit reference bureau in Kenya (CRB Africa and Metropol). However, despite licensing of CRB in Kenya and their facilitation of data sharing, no study has ever been undertaken to determine their effect on credit access in Kenya. This study aims at identifying the role and contribution made by CRB and its effect on credit access. Specifically, it sought to establish whether CRB has helped in reducing borrowing cost, effectively reducing risk identification/monitoring, reduced loan delinquency and enhanced microcredit extension in Kenya.

Credit bureaus enable lenders to lend to more and better risk clients and to determine better (and lower) the bad loan spread that they need to cover expected losses of credit to good payers. Those lower costs for good credit risks motivate those borrowers to be more careful with repayment (Djankov, McLiesh & Shleifer, 2005). Fulton, (2004) indicated that originally, the credit approval decision was made using a purely judgmental approach by merely inspecting the application form details of the applicant and commonly focused on the values of the 5 Cs of a customer. These 5Cs are Character which measures the borrower's character and integrity including virtues like reputation and honesty; Capacity which measures the borrower's ability to pay for example job status, source of income and finally Conditions where the members' borrowing circumstances are evaluated for example market conditions, competitive pressure, and seasonal character (Bessis, 2003).

## **STATEMENT OF THE PROBLEM**

The aim of every banking institution is to operate profitably in order to maintain its stability and improve in growth and expansion. For most people in commercial banking, lending represents the heart of the industry. Loans are the dominant asset at most banks, generate the largest share of operating income, and represents the bank's greatest risk exposure. Banking sector in Kenya has faced various challenges that include non-performing loans and fluctuations of interest rate among others, which have threatened the bank stability.

Lack of credit information has in the past led to banks factoring a risk premium in the pricing of credit. In Kenya, according to CBK, with several CRBs, the market will benefit from reduced costs from information search and inherent innovation from competition, this will be beneficial to the banks and borrowers alike as it will reduce cost and time of borrowing and minimize risk on the side of the bank (CBK 2010). For many years, Kenyan banks have had to contend with having incomplete information about borrowers that in turn translated to higher risk premiums on interest rates. Bank industry players also say lack of credit reference information leads to a risk of overpricing low risk borrowers and under pricing high risk borrowers (Rukwaro, 2001). Existence of high levels of loan delinquency problem in banking industry negatively affect the level of private investment, increase in deposit liabilities and constrain the scope of financial institution credit to borrowers through reduction of banks capital, following falling accumulation of losses to compensate for loan delinquency losses. The success of banks largely depend on the

effectiveness of their credit management systems because these institutions generate most of their income from interest earned on loans extended to small and medium entrepreneurs (Moti et al., 2012). The CBK Annual Supervision Report, 2010 indicated rising levels of non-performing loans by the banks in the last 10 years, a situation that adversely impacted on their profitability.

Locally, few aspects relating to Credit Reference Bureau have been reviewed in Kenyan context. (Mumi, 2010) reviewed the impact of credit reference bureau in financial institutions in Kenya; (Sigei, 2010) researched on evaluating the effectiveness of credit reference bureau in Kenya. The case of KCB; (Nganga, 2011) carried out a study on stakeholder perception of credit reference bureau service in Kenya credit market and finally (Gaitho, 2010) reviewed the role of credit reference bureau on credit access, a survey of commercial banks in Kenya. This study therefore attempted to fill the gap by examining the strategic role of CRB on the credit risk management of commercial banks in Kenya.

## **RESEARCH OBJECTIVES**

1. To determine the influence of credit information sharing on the credit risk management of commercial banks in Kenya.
2. To establish the effect of credit scoring on the credit risk management of commercial banks in Kenya.
3. To analyze the role of the reduced moral hazard on the credit risk management of commercial banks in Kenya.
4. To establish the effect of loan portfolio diversification on the credit risk management of commercial banks in Kenya.

## **LITERATURE REVIEW**

### **Theoretical Framework**

#### **Theory of Asymmetric Information**

The theory of asymmetric information indicates that it may be complex to distinguish between good and bad borrowers (Auronen, 2003) in Richard (2011), which may result into adverse selection and moral hazards problems. The theory expounds that in the market, the person that possesses more information on a particular 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. Theory of asymmetric information has led to significant accumulation of nonperforming loans in banks (Bester, 1994; Bofondi and Gobbi, 2003).

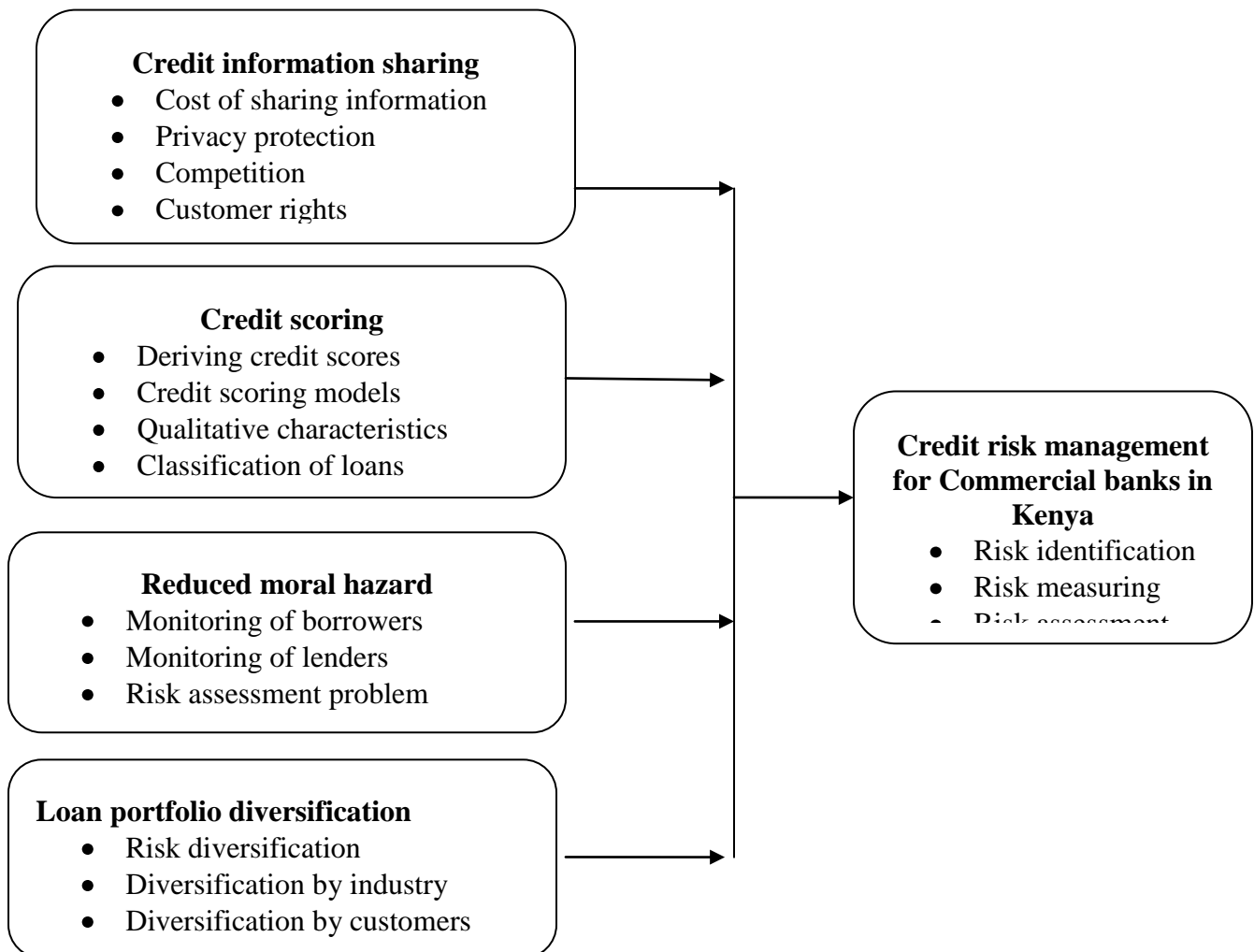
#### **Moral Hazard Theory**

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 borrower's 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)

#### **Information Theory of Credit**

Information Theory of credit states that the amount of credit to firms and individuals would be larger if financial institutions could better predict the probability of repayment by the potential customers. Public or private credit registries that collect and provide broad information to financial institutions on the repayment history of potential clients are crucial for deepening credit markets. The information that each party brings to a credit transaction will have important implications for the nature of credit contracts; the ability of credit markets to match borrowers and lenders efficiently and the role played by the rate of interest in allocating credit among borrowers. When lenders know more about their borrowers, their credit history, or other lenders to the firm, they are not as concerned about the problem of financing non-viable projects, and therefore extend more credit (Stiglitz et al ...1981)

### Conceptual Framework



**Independent Variable**

**Dependent Variable**

**Figure 1: The Conceptual Framework**

## Empirical Review

There are numerous researches on the effect of credit risk management on financial performance, and how could the effective credit risk management assist in reducing the possibility of failure and restricting the uncertainty of achieving the required financial performance. Most of these researches support the notion that there is a positive relationship between effective credit risk management and banks' profitability, and some of these studies support the notion that there is a negative relationship between them, as follows. Kithinji (2010) assessed the effect of credit risk management on the profitability of commercial banks in Kenya. Data on the amount of credit, level of non-performing loans and profits were collected for the period 2004 to 2008. The findings revealed that the bulk of the profits of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other variables other than credit and non-performing loans impact on profits.

Njanike (2009) found that the absence of effective credit risk management led to occurrence of the banking crisis, and inadequate risk management systems caused the financial crisis. Kithinji (2010) indicated that the larger part of the banks' profits was influenced by other variables other than credit and nonperforming loans. Aduda and Gitonga (2011) found that the credit risk management effected on profitability at a reasonable level. Aruwa and Musa (2012) investigated the effects of the credit risk, and other risk components on the banks' financial performance. They found a strong relationship between risk components and the banks' financial performance.

Moral hazard implies a lower average probability of payment, making credit more expensive. Stiglitz and Wise (2011) states that higher interest rates exacerbate 34 informational problem, adverse selection, because only higher risk borrowers are willing to accept loans at high interest rates. Additionally, those borrowers that have defaulted with a particular lender are the ones looking for alternative credit sources (Akerlof, 2000). This increases the average risk of lending and the corresponding interest rate. Credit is hence allocated to excessively risky projects, and low risk borrowers face tighter credit constraints. Adequately managing credit risk in financial institutions (FIs) is critical for the survival and growth of the FIs. In the case of banks, the issue of credit risk is of even of greater concern because of the higher levels of perceived risks resulting from some of the characteristics of clients and business conditions that they find themselves in.

Githinji (2010) in a study of the relationship between credit scoring practices by commercial banks and access to credit by small and medium enterprises in Kenya concludes that there is a relationship between credit scoring by Kenyan banks and access to credit by SMEs. She noted that the benefits gained from the use of credit scoring include accuracy in decision making process. The study thus recommended that banks need to use various credit assessment methods before availing loans to SMEs. In addition, the banks need to regularly review their credit policies. Gaitho (2013), on the role of credit reference bureaus on credit information sharing in Kenya: a survey of commercial banks in Kenya. This problem can be overcome through monitoring the behavior of borrowers. Thus, the idea of establishing Credit Reference Bureau (CRB) was conceived in order to assist banks in determining credit worthiness of their borrowers. CRBs allows for credit information sharing among the financial institutions. This study explores the effect of credit reference bureaus on credit access in Kenya. The sample of 96 respondents was drawn from the employees working in the headquarters of these banks targeting

managers within the finance, strategy and business development portfolios/dockets in the 42 commercial banks in Kenya. The study found out that CRB reduces borrowing cost and loan delinquencies to a moderate extent. It further established that CRB has enhanced effective risk identification/monitoring and microcredit extension in Kenya. The study therefore recommends that lenders and CRB should work closely to ensure that there is no information asymmetry and therefore ensure that credit flows to deserving borrowers.

A study on loan portfolio diversification and credit risk management among commercial banks in Kenya by Mokaya& Jagongo (2014) .This study therefore sought to establish the association between corporate loan portfolio diversification and credit risk management among commercial banks in Kenya. The specific objectives of the study included: to determine the relationship between geographical diversification and credit risk management, to establish the relationship between industry diversification and credit risk management and to establish the relationship between the size of borrowing company and credit risk management among the commercial banks in Kenya. The study employed descriptive research design. The study targeted 86 respondents. Data was collected by use of a questionnaire. The obtained data was cleaned; coded and statistical outputs generated using SPSS. Descriptive and inferential statistics were used to analyze the data. The analyzed data was then presented in charts and tables. The study found out that there was no association between geographical diversification ( $p=0.113$ ,  $r=0.197$ ) and credit risk management, an association ( $p=0.001$ ,  $r=0.515$ ) between industry diversification and credit risk management and an association ( $p=0.004$ ,  $r=-0.351$ ) between size diversification and credit risk management at the banks. Consequently, the following recommendations were proposed; a framework is established that helps determine the size of the borrowing companies and their potential to grow over time, measures are put in place that helps identify borrowing companies based on specific parameters such as level of corporate tax and those that identifies borrowing companies based on competitive advantages in areas of existence other than mere geographical locality among other recommendations.

## RESEARCH METHODOLOGY

The study employed a descriptive study design. Out of the 44 financial institutions, 31 banks are locally owned and 13 banks are foreign owned. The locally owned financial institutions comprise 3 banks with significant shareholding by the Government and State Corporations and 27 commercial banks. The study targeted employees in the credit departments and more specifically the employees in the credit administration unit, consumer credit unit, corporate banking, business banking and personal banking of Equity Bank, The Kenya Commercial Bank, Jamii Bora Bank, Equatorial Commercial Bank and the Co-operative bank of Kenya. A statistical technique provided by (Mugenda&Mugenda,2003) suggest that a sample of 10% is sufficient to represent a population and recommends a criteria for selecting a sample size will adopted as a model for a sample for this study as follows: Our target population in this study was less than 10,000, thus the sample of 384 can be adjusted as follows using the following formula suggested by (Mugenda and Mugenda,2003).

$$nf = n / (1+n/N)$$

In this study therefore

$$nf = n / (1+n/N) = 384 / (1+384/393) = 194$$

The credit departments involved are Credit Administration Unit, Consumer Credit Unit, Corporate Banking, Business Banking and Personal Banking, In this case one employee per department was included in the sample, taking cognizant that homogeneity of the sample is high as the industry and the market for the banks is the same.

**Table 1: Sample size**

Category	Population	Sample Size
Personal Banking	83	41
Business Banking	74	36
Corporate Banking	76	37
Consumer Credit Unit	100	49
Credit Administration Unit	60	31
<b>Total</b>	<b>393</b>	<b>194</b>

Moreover, cluster sampling technique is chosen for this study as it will increase a sample's statistical efficiency, provide adequate data for analyzing the various subpopulations or cluster and also enable different research methods and procedures to be used in different clusters (Coopers and Schindler, 2011). Primary data was collected by administering open and close-ended questionnaire to the respondents. Both descriptive and inferential statistics was adopted for the study. The quantitative data was analyzed by using descriptive statistics which includes frequency distribution tables and measures of central tendency (the mean), measures of variability (standard deviation) and measures of relative frequencies. The inferential statistics included a regression model which established the relationship between variables. Data was analyzed by the use of a statistical software SPSS version 20.

To measure the role of Credit Referencing Bureaus on credit risk management of commercial banks in Kenya, the study adopted the linear regression model and Pearson correlation. The Pearson correlation tested the strength of the relationship while the regression analysis established the form of relationship between the independent and dependent variable. The regression took the following form:

$$Y = \beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \beta_3 \chi_3 + \beta_4 \chi_4 + \epsilon$$

Where: Y = Credit Risk Management,  $\chi_1$  = Credit Information Sharing,  $\chi_2$  = Credit Scoring,  $\chi_3$  = Reduced Moral Hazard,  $\chi_4$  = Loan Portfolio Diversification,  $\beta_0$  = the constant,  $\beta_{1-n}$  = the regression coefficient or change included in Y by each  $\chi$  and  $\epsilon$  = error term

## RESULTS

### Response Rate

A total of 194 questionnaires were issued to Personal Banking, Business Banking, Corporate Banking, Consumer Credit Unit, Credit Administration Unit officers. The table 4.1 shows the response rate. From the study, 168 out of the 194 sampled respondents filled-in and returned the questionnaires making a response rate of 86.59%.

**Table 2: Response Rate**

Issued questionnaires	Returned	Response Rate
<b>194</b>	<b>168</b>	<b>86.59%</b>



According to Bailey (2000) assertion that a response rate of 50% is adequate, while a response rate greater than 70% is very good. This implies that based on this assertion, the response rate in this case of 86.59% is therefore very good.

### Reliability analysis

The value of the Cronbach's alpha of well above 0.7 implied that the instruments were sufficiently reliable for the measurement. As most item total correlations were reasonably high, the construct validity of the instruments was considered reasonable (Brown, 2000). Table 3 illustrates the results of the reliability analysis. It involved questionnaires from respondents.

**Table 3 Reliability Analysis**

Variable	Cronbach's alpha	No of items
Credit Information Sharing	0.730	10
Credit Scoring	0.729	6
Reduced Moral Hazard	0.870	4
Loan Portfolio Diversification	0.761	10

The Alpha coefficients were all greater than 0.7 indicating an acceptable reliability of the instruments. The instruments therefore were appropriate for the study.

### Demographic Information

Responses by the Personal Banking, Business Banking, Corporate Banking, Consumer Credit Unit, Credit Administration Unit officers were analyzed on the basis of their background information. This section focuses on the gender of the respondent, age of the respondent, education qualification of the respondent and the duration the respondents worked for the organization.

**Table 4 : Background Information**

Characteristics	Frequency	Percent
<b>Gender of the Respondents</b>		
Male	77	45.83
Female	91	54.17
<b>Age of the Respondent</b>		
21-25 Years	29	17.26
26-30 Years	18	10.71
31-35 Years	12	13.09
36-40 Years	31	18.45
41-45 Years	56	33.33
46-50 Years	22	7.14
<b>Education Qualification</b>		
College	13	7.74
Graduate	92	54.76
Postgraduate	59	35.12
Others	4	2.38

Characteristics	Frequency	Percent
<b>Duration worked in the Organization</b>		
Less than 5 Years	21	12.5
5-10 Years	13	7.74
11-15 Years	49	29.17
16-20 Years	40	23.81
21-25 Years	18	10.71
26-30 Years	27	16.07

Table 4 presents the findings on the background information of respondents. Of the respondents, 54.17% of the respondents were female while 45.83% of the respondents were male. The respondents who were between 41-45 Years made the 33.33% followed by 18.45% of the respondents who were between 36-40 Years, 17.26% of the respondents were aged between 21-25 Years, 13.09% of the respondents were aged between 31-35 yeasts while the rest were between 46-50 Years. Most of the respondents as represented 54.76% of the respondents were graduates while 35.12% of the respondents had post-graduate qualifications while 2.38% of the respondents had other qualifications. When the respondents were presented with how long the have worked in the organization. 29.17% of the respondents had between 11-15 years in experience, 23.81% of the respondents had between 16-20 years in experience, 16.07% of the respondents had between 26-30 Years in experience while 12.5% of the respondents had less than 5 years in experience.

### Credit Information Sharing

The study sought to determine the influence of credit information sharing on credit risk management of commercial banks in Kenya. The respondents were presented with statements with factors that affect the credit information sharing and the responses are presented in Table 5.

**Table 5: Credit Information Sharing**

Statement	n	Mean	Standard Deviation
CRB providing information about borrower's income, employment, living costs and existing loan repayments to help the creditor decide whether the borrower can afford to repay a loan	168	4.95	0.877
Creditors in general, incorporate credit investigation and background checks as part of their credit process	168	4.43	0.579
Through provision of up to date borrower credit information, CRB has significantly reduced cases of nonperforming loan	168	4.12	0.019
Information from CRB helps identify defaulters in terms of credit history and obligations and thus mark them a risky clients	168	3.95	0.819
Credit bureaus serve creditors as an impartial and efficient means to quickly exchange references on the paying habits and current debt of credit applicants	168	4.93	0.426
Credit bureaus provides reliable and inexpensive system to exchange information	168	4.19	0.375

Credit bureaus strive to provide credit reports with information that is relevant, complete, accurate and recent	168	4.70	0.084
CRB offers financial institutions access to databases that capture relevant aspects of clients' borrowing behavior	168	4.74	0.045
CRB has reduced cases of multiple borrowing, over-indebtedness and loan defaults	168	4.35	0.135
CRB has helped instill culture of financial discipline since consumers know that they are monitored	168	4.00	0.441

As presented in Table 5, most of the respondents strongly agreed with the statement CRB providing information about borrower's income, employment, living costs and existing loan repayments to help the creditor decide whether the borrower can afford to repay a loan with a mean of 4.95 and a standard deviation of 0.877. Most of the respondents strongly agreed that Creditors in general, incorporate credit investigation and background checks as part of their credit process with a mean of 4.43 and a standard deviation of 0.579 and on the statement that through provision of up to date borrower credit information, CRB has significantly reduced cases of nonperforming loan with a mean of 4.12 and a standard deviation of 0.019. The respondents agreed that Information from CRB helps identify defaulters in terms of credit history and obligations and thus mark them risky clients with a mean of 3.95 and a standard deviation of 0.819. The respondents strongly agreed with the statements: Credit bureaus serve creditors as an impartial and efficient means to quickly exchange references on the paying habits and current debt of credit applicants; Credit bureaus provides reliable and inexpensive system to exchange information; Credit bureaus strive to provide credit reports with information that is relevant, complete, accurate and recent with a mean of 4.93; 4.19 4.70 and a standard deviation of 0.4256, 0.375 and 0.084 respectively. The respondents strongly agreed with the following statements; CRB offers financial institutions access to databases that capture relevant aspects of clients' borrowing behavior; CRB has reduced cases of multiple borrowing, over-indebtedness and loan defaults; CRB has helped instill culture of financial discipline since consumers know that they are monitored with a mean of 4.74; 4.35 and 4 and the standard deviation of 0.045, 0.135 and 0.441 respectively. On the changes in consumer behaviour the findings are similar to those of DoblazMadrid and Minetti (2009) find that if lenders enter credit information sharing institution, their borrowers improve their repayment performance –delinquent payments on leases and loans decrease.

**Table 6: Relationship between Credit Risk Management Practices and Credit Information Sharing**

		Credit Information Sharing
<b>Credit Risk Management Practices</b>	Pearson correlation	0.705
	<b>Sig.</b>	<b>0.000</b>

Table 6 presents there is a positive significant relationship between credit risk management practices and credit information sharing at 95% confidence interval as indicated by the P-value of 0.000. This concurs with Jappelli and Pagano (2002) findings that risk of default is about

half in countries where credit information is shared, irrespective of the type of information exchanged.

### Reduced Moral Hazard

The study sought to determine the role of the moral hazard on credit risk management of commercial banks in Kenya. The respondents were presented with statements with factors that affect the credit information sharing and the responses are presented in Table 7.

The responses on the role of moral hazard are presented above in 7. The respondents agreed Moral hazard on credit officers and borrowers arises when loans are not subjected to normal objective credit assessment before disbursement with a mean of 4.12 and standard deviation of 0.591. The respondents agreed that banks must have in place written guidelines on the credit approval process and the approval authorities of individuals or committees as well as the basis of those decisions with a mean of 4.47 and standard deviation of 0.213. The respondents strongly agreed that Clear established process for approving new credits and extending the existing credits has been observed to be very important while managing Credit Risks in banks with a mean of 4.88 and standard deviation of 0.528. The respondents agreed that related party transactions should be reviewed by the board of directors under due processes of good governance with a mean of 3.76 and standard deviation 0.488.

**Table 7: The Reduced Moral Hazard**

Statement	n	Mean	Standard Deviation
Moral hazard on credit officers and borrowers arises when loans are not subjected to normal objective credit assessment before disbursement.	168	4.12	0.591
Banks must have in place written guidelines on the credit approval process and the approval authorities of individuals or committees as well as the basis of those decisions	168	4.47	0.213
Clear established process for approving new credits and extending the existing credits has been observed to be very important while managing Credit Risks in banks	168	4.88	0.528
Related party transactions should be reviewed by the board of directors under due processes of good governance	168	3.76	0.488

**Table 8: Relationship between Credit Risk Management Practices and the Reduced Moral Hazard**

Credit Risk Management Practices	Pearson correlation	Reduced Moral Hazard
		0.457
	Sig.	<b>0.004</b>

Table 8 presents there is a positive significant relationship between credit risk management practices and the reduced moral hazard at 95% confidence interval as indicated by the P-value of

0.004. Moral hazard models imply that information sharing should reduce default rates and interest rates and increase lending, either because credit bureaus foster competition by reducing informational rents (Padilla and Pagano, 1996) or because they discipline borrowers (Padilla and Pagano, 1997).

### Credit Scoring

The study sought to determine the influence of credit scoring on credit risk management of commercial banks in Kenya. The respondents were presented with statements with factors that affect the credit information sharing and the responses are presented in Table 9.

On credit scoring the respondents disagreed the Board of directors approves and reviews periodically the credit scoring strategy and significant credit scoring policies with a mean of 2.82 and a standard deviation of 1.172. The respondents strongly agreed Credit scoring strategy reflects the Banks tolerance for credit scoring and the level of profitability with a mean of 4.32 and a standard deviation of 0.712. Senior management implements the credit scoring strategy approved by the board of directors. Credit scoring addresses all of the Banks activities and at both the individual credit and portfolio levels. Banks should identify and manage credit scoring in all products and activities. There should be set standards for formulating credit scores in the industry for comparability

**Table 9: Credit scoring**

Statement	n	Mean	Standard Deviation
Board of directors approve and review periodically the credit scoring strategy and significant credit scoring policies	168	2.82	1.172
Credit scoring strategy reflects the Banks tolerance for credit scoring and the level of profitability	168	4.32	0.712
Senior management implements the credit scoring strategy approved by the board of directors	168	4.19	0.7
Credit scoring addresses all of the Banks activities and at both the individual credit and portfolio levels	168	2.40	0.722
Banks should identify and manage credit scoring in all products and activities	168	3.71	1.016
There should be set standards for formulating credit scores in the industry for comparability	168	3.76	0.861

**Table 10: Relationship between Credit Risk Management Practices and Credit Scoring**

Credit Risk Management Practices	Credit Scoring
Pearson correlation	0.860
Sig.	0.000

Table 10 presents indicates a positive significant relationship between credit risk management practices and the credit scoring at 95% confidence interval as indicated by the P-value of 0.000.

CRBs offers credit scoring and information sharing that can facilitate the building of information capital that will guide the pricing of loans by financial institutions.

### Loan Portfolio Diversification

The study sought to determine the influence of loan portfolio diversification on credit risk management of commercial banks in Kenya. The respondents were presented with statements with factors that affect the credit information sharing and the responses are presented in Table 11.

Table 11 presents the findings on loan portfolio diversification. The respondents disagreed with the statement they preferred group financing with a mean of 2.95 and standard deviation of 1.083. The respondents however agreed that the portfolio had Sectorial orientation with a mean of 4.02 and standard deviation of 0.499 and strongly agreed Portfolio performance affected the loan portfolio diversification with a mean of 4.71 and standard deviation of 0.152. The respondents agreed that the Review of funding priority orientation highly affected the loan portfolio diversification with a mean of 4.31 and standard deviation of 0.526. The respondents however disagreed with the statement Portfolio concentration affects diversification but agreed on Portfolio return to cost measurement and Portfolio integration with other risk types with a mean of 3.95 and 4.61 respectively.

**Table 11: Loan Portfolio**

Statement	N	Mean	Standard Deviation
Preference for group financing	168	2.95	1.083
Sectorial orientation	168	4.02	0.499
Portfolio performance	168	4.71	0.152
Review of funding priority orientation	168	4.31	0.526
Portfolio concentration	168	2.16	0.324
Portfolio return to cost measurement	168	3.95	0.258
Portfolio integration with other risk types	168	4.61	0.848

**Table 12: Relationship between Credit Risk Management Practices and Loan Portfolio Diversification**

		Loan Portfolio Diversification
Credit Risk Management Practices	Pearson correlation	0.890
	Sig.	<b>0.000</b>

Table 12 presents there is a positive significant relationship between credit risk management practices and the loan portfolio diversification at 95% confidence interval as indicated by the P-value of 0.000. Michael et al (2006) emphasized that loan portfolio affect operational efficiency which in turn affects the profits of the bank, liquidity position and solvency position of banks. Batra, S (2003) noted that diversification also affect the psychology of bankers in respect of their disposition of funds towards credit delivery and credit allocation.

### Regression Analysis

Regression coefficients represent the mean change in the response variable for one unit of change in the predictor variable while holding other predictors in the model constant. This statistical control that regression provides is important because it isolates the role of one variable from all of the others in the model.

**Table 13: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.590 <sup>a</sup>	.592	.563	.38201

**a. Predictors: (Constant), Credit Information Sharing, Credit Scoring, Reduced Moral Hazard, Loan Portfolio Diversification**

The Adjusted R Squared for all value tells us that the model accounts or 59.2% of variance in the credit risk management practices by Commercial banks. 59.2% of the variations in the credit risk management practices by Commercial banks can be explained by the identified independent variables: Credit Information Sharing, Credit Scoring, Reduced Moral Hazard, and Loan Portfolio Diversification.

**Table 14: Significance of the Model**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.507	5	4.101	28.105	.002 <sup>b</sup>
	Residual	5.400	162	.146		
	Total	25.907	167			

a. Dependent Variable: Credit Risk Management Practices

**b. Predictors: (Constant), Credit Information Sharing, Credit Scoring, Reduced Moral Hazard, Loan Portfolio Diversification**

The model is significant as shown by the F- test and the F- value of 28.105; the P-value is 0.000 which indicates the statistical significance of the model. The ANOVA test produced an f-value of 28.105 which was significant at 0.05 significance level ( $p = 0.002$ ). This depicts that the regression model is significant at 95% confidence level; that is, has 2% probability of misrepresentation.

### Independent Variables

In testing the significance of credit information sharing in the relationship, it depicts p-value of 0.044, making it much statistically significant. It has a regression coefficient of 0.121, a strong positive relationship. A unit of credit information sharing results to 12.1% changes in credit risk management practices. In testing the significance credit scoring in the relationship, it depicts p-value of 0.050, making it much statistically significant. It has a regression coefficient of 0.054, a strong positive relationship. A unit of credit scoring results to 5.4% changes in credit risk management practices.

A p-value of 0.0477 explains that the regression coefficient corresponding to reduced moral hazard is statistically significant in explaining the credit risk management practices. A regression coefficient of 0.285 implies that a unit reduced moral hazard increases the credit risk management practices by 28.5%. A p-value of 0.012 explains that the regression coefficient

corresponding to loan portfolio diversification on is statistically significant in explaining the credit risk management practices. A regression coefficient of 0.098 implies that unit loan portfolio diversification increases the credit risk management practices by 9.8%.

**Table 15: The Fit of the Model**

Model	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	6.227	2.419	1.644	2.575
Credit Information Sharing	.121	.331	.034	.044
Credit Scoring	.054	.356	.016	.050
Reduced Moral Hazard	.285	.273	.138	.047
Loan Portfolio Diversification	.098	.234	.050	.012

The predictors Equation

$$Y = 6.227 + 0.121X_1 + 0.054X_2 + 0.285X_3 + 0.098X_4 + 0.382$$

$$S.E = 2.419 \quad 0.331 \quad 0.356 \quad 0.273 \quad 0.234$$

$$T\text{-Statistic} = 1.644 \quad 0.034 \quad 0.016 \quad 0.138 \quad 0.050$$

$X_1$  = Credit Information Sharing

$X_2$  = Credit Scoring

$X_3$  = Reduced Moral Hazard

$X_4$  = Loan Portfolio Diversification

## Conclusion

Looking at the variables collectively, it's evident from the table that 59.2% of variance in the credit risk management practices by Commercial banks. 59.2% of the variations in the credit risk management practices by Commercial banks can be explained by the identified independent variables: Credit Information Sharing, Credit Scoring, Reduced Moral Hazard, and Loan Portfolio Diversification. CRB allows for credit information sharing among the financial institutions. Credit information sharing undoubtedly plays a pivotal role in reducing the information asymmetry that exists between banks and borrowers. The major benefit that the banks receive from CRB is that they are able to get credit information on prospective borrowers



that will facilitate assessment of credit requests to mitigate risks of bad debts (Sullivan and Sheffrin 2003).

## **Recommendations**

### **Credit Information Sharing**

Since there is great significance in the relationship between information sharing and credit risk management, government and commercial banks in Kenya should carry out awareness seminars about the credit policies and the credit information sharing system to remove the negative notion of 'blacklisting' from the consumers of banking products and the general public and enhance its importance to the public. To facilitate credit information sharing even more effectively, information access should be available at low or no cost. The government should also consider allowing credit information systems extended to other non-bank credit providers in order to ensure proper credit information sharing. This is because a lot of people also get access to credit from a whole host of non-banks including, microfinance institutions, SACCOs, other financial sector regulators and utility companies.

### **Credit Scoring**

To avoid inaccuracies in deriving credit scores banks and regulators should device a way of verifying credit scores since at the moment the banks are using unverified data from the bureaus to either grant or deny a customer any credit facility. Need to use various credit assessment methods before availing loans to customers. In addition, the banks need to regularly review their credit policies.

### **Reduced Moral Hazard**

Clear established process for approving new credits and extending the existing credits should be observed to be very important in managing Credit Risks in banks. Monitoring of borrowers should be done in monitoring current and potential exposures change with both the passage of time and the movements in the underlying variables

### **Loan Portfolio Diversification**

The bank should establish a framework is established that helps determine the amount to offer to different customers. The banks should identify various products that make up portfolio to extend the reach of different borrowers.

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