

## **Effects Of System Integrity In Credit Information Sharing On Management Of Credit Risk In Commercial Banks In Nakuru Town, Kenya**

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**Abstract:** *Banks need to ensure their organizational information is kept safely and accessed only by authorized personnel. Protecting information from illegal and inappropriate use is essential for a bank to establish and maintain a competitive advantage. Several studies done in credit risk management have not explicitly linked it to the integrity of information sharing systems across banks. Therefore, the study sought to analyse how systems integrity in credit information sharing practises affects the management of credit risk in commercial banks in Nakuru Town. Descriptive survey design was adopted targeting 88 respondents comprising branch management and credit staffs drawn from 28 bank branches in Nakuru Town using stratified random sampling. Data was collected using questionnaires and was analysed using both descriptive and inferential statistical methods with the aid of the computer software Statistical Package for Social Scientists (SPSS) version 20. The findings revealed that the system integrity in credit information sharing significantly affected the management of credit risk ( $\beta = 0.528$ ;  $p < 0.05$ ) and could explain upto 23% of the variations in the management of credit risk. This was mainly attributed to the feeling that insider lending and owner control compromised the information sharing protocols. Therefore, the study recommends that a system appraisal committee be set up to regularly monitor and evaluate the performance of the credit information sharing system. Other measures include stressing adherence to lending procedures and other best practices to ensure that the system plays its agency role without compromise.*

**Key Words:** *System Integrity, Credit Information Sharing, Management Of Credit Risk*

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### **I. Introduction**

According to (Cavelaars & Passenier, 2012), commercial banks are characteristically the dominant players in the financial sector which is increasingly demanding more financial products. Quite understandably, given the levels of competition and the increasing flexibility among the lenders, the lending practice will vary across banks and other financial institutions and with it the practice of information sharing, (Ferretti, 2006). Thus, depending on their lending practices and in particular their credit risk models, some banks may be risk tolerant than others. Banks have to be cautious in offering loans because as they offer loans to customers they expose themselves to liquidity and default risks which impacts negatively on banks' profits and survival (Rasiah, 2010). This is due to the nature of their business which exposes them to the risks of default from borrowers.

Prudent risk assessment and creation of adequate provisions for bad and doubtful debts can cushion the banks from the risk. However when the level of nonperforming loans is very high the provisions are not adequate protection. A non-performing loan is a loan that is in default or close to being in default. A loan is nonperforming when payments of interest and principal are past due by 90 days or more, or at least 90 days of interest payments have been capitalized, refinanced or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons to doubt that payments will be made in full (IMF, 2009). While it remains inarguable that credit risks practices are intricately linked to default potentials and the existence of non-performing loans, the direct link between information sharing practices such as system integrity which is critical to the credit risk evaluations and the management of credit risk is yet to be fully established.

System integrity refers to the quality of the human, procedural and technological systems put in place to safeguard the integrity of transactions between parties, (Parrenas, 2005). Essentially, systems integrity govern information flow in and out of an organization and for this, the information must be secured (Rotke & Gentgen, 2008). In the current study, system integrity will encompass the management approach to securing clients credit information, the personnel information security management, the ICT technology in place used for information processing and sharing, the third party, such as CRB, roles in information sharing and the oversight roles of the board and other authorities in ensuring that the credit information of clients is not mishandled and that risk management procedures are duly adhered to.

Banks need to ensure their organizational information is kept safely and accessed only by authorized personnel. Protecting information from illegal and inappropriate use is essential for a firm to establish and maintain a competitive advantage. Banks ought to have a security program that suit their particular size and complexity and the nature and scope of its activities (Farquhar, 2010). It is a requirement that the board of directors, or appropriate committee of the board, approve the bank's information security program and oversee the program's development, implementation, and oversight (Ferber, 2009). This is vital for the acquisition, processing and sharing of the clients credit information history. Evidently, for the system to demonstrate high fidelity, there needs to be a system protocol in place so that the information flow is adequately monitored. Protocol is the rules determining the format and transmission of data.

Protocol in an organization can be instrumental in creating an information hierarchy where information can only be accessed upon authorization (Zanjani, 2008). Asset management operations is typically instrumental in implementing the bank's information security program, particularly with respect to those aspects of the IT environment for which it is responsible. Asset management operations should ensure that those aspects of the bank's lending environment it controls, either directly or through oversight of a third-party servicer, conform to the bank's policies, standards, procedures, and to applicable banking regulations and guidance (Mark & Micheal, 2010). In many cases, there are automated interfaces or file transfers between the credit information systems and the core asset management accounting system. The information and reports provided by these systems are timely, accurate, reliable, consistent, complete, and relevant. In addition, the bank and customer information should be adequately protected from unauthorized disclosure or alteration and are available when needed (Frey, 2010).

Moreover, at the time of carrying out this survey in the year 2015, Dubai bank and Imperial bank were closed down by the regulator due to breach of procedures which mainly affected how credit was being advanced and the growth of NPLs and this was primarily as a result of manipulating the set systems and procedures. This has been going on even when the interest regimes have been going down and the economy promising. What is, however, possible intuitively, is that the high default rates could have arisen from the borrowers credit quality deteriorating due to poor credit risk management. This demands for better accessibility, utilization, control and strict compliance to policies and procedures when undertaking credit appraisal. In other words, effective credit risk management depends on adherence to banks best lending practices of which system integrity in acquiring borrower's information is vital. Previous studies have dwelt so much on the performance of the banks and external factors such as interest rates, inflation and growth of economy but have not explicitly linked it to system integrity concerns in the practice of credit information sharing across banks. Therefore, this motivated the need for the present study which sought to analyse the effects system integrity of credit information sharing practices in managing credit risk in commercial banks in Nakuru Town, Kenya.

The town has been rated as the fastest growing urban centre in the East and Central African region, (UN Habitat, 2013) subsequently, this profile has seen it emerge as a new commercial hub attracting investments from the diverse business community in the country including 28 banks who have their branches in the CBD, deposit taking microfinance (DTMs) and numerous Saccos. This may present a new territorial challenge with the addition of new clients of whom they are expected to have a credit profile and new banking partners who they must share clients credit information with. The stiff competition means that some banks may involve in high risk lending disregarding the high probability of default and therefore the need to understand how to manage credit risks by gathering the borrowers' information.

## **II. Literature Review**

### **Theoretical Review**

#### **Information Asymmetry Theory**

Information asymmetry theory is concerned with the the structure and nature of information access and distribution in the market. The current study is concerned primarily with the credit information sharing systems and its effects on credit risk management. As such, information asymmetry existing between the lender and the borrowers and among the lenders themselves in the system can be minimized by ensuring that the system integrity is upheld.

#### **Agency Theory**

Agency theory is developed as framework for analyzing conflicting interests between key stakeholders, in addition to the development of mechanisms for resolving conflicts. This theory also explains a possible mismatch of interest between shareholder management and debt holders due to asymmetries in earning distribution, which can result in the firm taking too much risk or not engaging in positive net value project. It is, therefore, important for all stakeholders involved in the business of lending to ensure that systems for credit

information sharing are well managed and devoid of agency compromises. This will enhance lenders capability in managing credit risk.

### **Empirical Review**

Numerous approaches have been developed in client appraisal process by financial institutions. They range from relatively simple methods, such as the use of subjective or informal approaches, to fairly complex ones, such as the use of computerized simulation models (Mathews & Thompson, 2008). Many lending decisions by banking institutions are frequently based on their subjective feelings about the risk in relation to expected repayment by the borrower. Banking institutions commonly use this approach because it is both simple and inexpensive. While each company would have its own method of determining risk and quality of its clients, depending on the target group, the following client evaluation concepts are useful for most occasions. These concepts are referred to as the 5C's of credit appraisal, (Young, Glennon & Nigro, 2006). These elements are Character, Capacity, Collateral, Capital and Condition.

A study by (Mulumba, 2011) concluded that most of the bank failures in Uganda in the 1990s were as a result of either compromising the system or ignoring the lending procedures in favor of personalities. Insider lending which is also unprocedural has been associated with bank failures, (Berry, 2010). As study by Rasoulinezhad (2013) on information sharing in Iranian banks identified restricting information access as a way of protecting vital information bases, the study emphasized the use of IT in restricting information although it also cited the need for a protocol based approach to restriction of knowledge. This approach required the formation of information access hierarchies which were restricted at every stage by queries for authentication and permission. Shehzad, de Haan & Scholtens B (2010), in a study of ownership, control and pyramids in Spanish commercial banks present empirical evidence from a data set comprising 500 banks from 2005 to 2007, that ownership proxied by three levels of shareholding (10%, 20% and 50%) has a positive impact on the non performing loans ratio when the level of ownership concentration is defined at 10% but a negative impact when the level of ownership concentration is defined at 50%. Therefore they suggest that sharing of control may have adverse effects on the quality of loans extended up to a level, but in cases of a strong controlling owner, bank's management becomes more efficient leading to lower non performing loans. These findings were also supported by (Azofra & Santamaria, 2011) who on a study of the impact of bank ownership concentration on impaired loans and capital adequacy, found that high levels of ownership concentration benefit both the bank's profitability and efficiency for a sample of Spanish commercial banks. This indicated that the integrity of the banks internal credit control systems improved with more owner control. However, this was mainly observed in private banks or where the government had very little stake as was evident from the findings of Micco *et al.*, (2004), who analyzed 50,000 financial institutions with different ownership types covering 119 countries and concluded that non performing loans tend to be higher for banks with state ownership than for other groups. Hu *et al.*, (2004) also used a panel of Taiwanese banks and found a positive correlation between capital share owned by the state and the level of non-performing loans.

A PriceWater Coopers (2015) report shows that the levels of NPLs in leading banks in South Africa were still high at 39% in 2014 despite credit risk measures taken by the banks to control them. In Ethiopia, Boru (2014) observed that banks hold excess provision than expected due to problems in credit risk management that has affected the quality of assets. He further notes that the provision held for loans even triples the general provision requirement for healthy loans. In Kenya, the same has affected the banking industry despite the enactment of laws on credit information sharing and the subsequent introduction of the Credit Reference Bureaus. Empirical studies such as Boru (2014), Nsambu (2014) and Magali (2013), however, discount the effect of external factors on the performance of loans and instead attributing the poor performance of loans to the banks non-adherence to the Basel Principles. The studies, though, do not further discuss the internal bank credit risk management practices in detail.

### **III. Research Design And Methodology**

Descriptive research design was used in this study. The study was carried out in commercial banks in Nakuru Town CBD, Nakuru County in early 2015 when there were 28 commercial banks branches operating in the town. The study targeted 161 officers consisting of branch managers, credit managers and credit staffs in all the banks. Stratified random sampling was used in this study and from this a sample size of 115 respondents resulted which was then distributed according to the strata. Questionnaires were used as the main data collection instruments and their information was supplemented by the banks reports. The questionnaires were pilot tested in banks situated in Eldoret town which were not to be part of the banks eventually sampled. The results of the piloted questionnaires enabled the researcher to determine the content validity of questionnaires items and adjust them accordingly by revising the document. The reliability of data collection instruments was also determined using the internal consistency method which yielded a Cronbach's coefficient alpha value of  $\alpha = 0.827$  indicating that there was very high consistency among the items in the research instruments and this, therefore, could result in very reliable findings. The computer software Statistical Package for Social Scientists (SPSS)

version 20 was to conduct initial data analysis using simple descriptive statistical measures such as, frequencies and percentages to give glimpse of the general trend. However, correlation analysis was used to determine the nature of the relationship between variables at a generally accepted conventional significant level of  $P = 0.05$ , (Sekaran, 2003). Regression analysis was applied to analyze the relationship between the dependent variable and the independent variable respectively, Hair, Black, Babin, Anderson and Tatham (2005). The linear regression model was assumed to hold under the equation:

$$y = \beta_0 + \beta_1 X_1 + \varepsilon$$

#### IV. Results And Discussions Of Findings

##### Introduction

This chapter presents results arising from the analysis of data collected using questionnaires. The data collected was analysed using descriptive and inferential statistical methods for each variable and the findings presented in tabular summaries, and their implications discussed.

##### System Integrity in Credit Information Sharing

The study sought to establish the system integrity in credit information sharing and its effects on the management of credit risk. These results are presented in Table 1.

**Table 1: Views on System Integrity in Credit Information Sharing**

Statements	Mean	Std.Deviation	Totals
The management information systems in the banks ensures that the credit information security is guaranteed	3.95	0.772	88
There is poor collaboration by the boards and management of the financial institutions on the design of the information sharing systems	2.93	1.192	88
The financial institutions in the area have well established credit information sharing protocols	3.33	1.238	88
There is unsatisfactory adherence to information sharing protocols among the financial intermediaries	3.26	1.067	88
Insider lending and owner control causes Information sharing protocols to be ignored by the credit staff	3.24	1.135	88
There is speedy consideration in granting process in order to serve the bank target ahead of competition	3.53	1.268	88
Use of ICT in information sharing has enabled the system to put adequate controls to information so that access to information can be traced to the users	4.01	0.903	88
The credit information in the system is regularly updated in order to make it more reliable	4.03	0.734	88

The results in Table 1 indicate that the management information systems in the banks ensured that the credit information security is guaranteed (Mean = 3.95). However, the findings suggest that the respondents were evenly divided on whether there was poor collaboration by the boards and management of the financial institutions on the design of the information sharing systems (Mean = 2.93). It was also evident from the findings that the financial institutions in the area have well established credit information sharing protocols (Mean = 3.33) although there was unsatisfactory adherence to information sharing protocols among the financial intermediaries (Mean = 3.26). This was likely to be as a result of insider lending and owner control causing information sharing protocols to be ignored by the credit staff (Mean = 3.24). Most (Mean = 3.53) of the respondents also felt that the need for speedy consideration in granting process in order to serve the bank target ahead of competition partly contributed to the unsatisfactory adherence to protocol. The use of ICT in information sharing had enabled the system to put adequate controls to information so that access to information can be traced to the users (Mean = 4.01). The findings also indicate that the credit information in the system was regularly updated in order to make it more reliable (Mean = 4.03).

##### Management of Credit Risk Management

Finally, the study sought to determine the status of credit risk management in the banks in the area. These results are presented in Table 2

**Table 2 Views on Management of Credit Risk**

Statements	Mean	Std. Deviation	Totals
Lax Procedures used for credit risk assessment contribute to the increase in non-performing assets in the banks	3.78	1.208	88
Lack of aggressive credit collection methods contributes to the increase in non-performing assets in the banks	3.56	1.202	88
Poor valuation of collateral contributes to the increase in non-performing assets in the banks	3.50	1.124	88
Our bank frequently monitors the performance of the loans in order to assess their deterioration levels	4.2	0.805	88
Our credit staff makes attempts to communicate with deteriorating borrowers in order to understand their problems	4.38	0.716	88

Our credit rating procedures ensures that only those who meet the threshold are given loans	4.19	0.842	88
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The results in Table 2 indicate that lax procedures used for credit risk assessment contribute to the increase in non-performing assets in the banks (Mean = 3.78). Lack of aggressive credit collection methods also contributed to the increase in non-performing assets in the banks (Mean = 3.56). The findings also indicate that poor valuation of collateral contributed to the increase in non-performing assets in the banks (3.50) as some of the collateral could not be readily disposed and sometimes failed to yield the full value of the loan and interest accrued. However, the banks frequently monitored the performance of the loans in order to assess their deterioration levels (Mean = 4.20). The findings also indicate that the credit staff in the banks at times made attempts to communicate with deteriorating borrowers in order to understand their problems (Mean = 4.38). Majority (Mean = 4.19) of the staff also said that their credit rating procedures ensured that only those who meet the threshold were given loans.

**Correlation Analysis**

These results of the correlation analyses are presented in Table 3

**Table 3 Summary of Correlations**

		System Integrity
Management of Credit Risk	Pearson Correlation	.528
	Sig. (2-tailed)	0.029
	N	88

The study also sought to determine whether there existed a significant relationship between system integrity in credit information sharing and the management of credit risk. The correlation analysis showed that a relationship exists ( $r = 0.528$ ,  $\alpha = 0.05$ ,  $p = 0.029$ ). This result suggested that a strong and positive relationship existed between the variables implying that system interference through selective information sharing or other compromises could have a considerable impact on the stakeholders in the banking sector. It could give low incentive to stakeholders to share credit information across the system and undermine the role of the CRB in the area as a fiduciary of information. This would eventually lead to loss in confidence of the system.

**Regression Analysis**

**Table 5a: Linear Regression Analysis Model Summary**

R	R Square	Adjusted R Square	Std. Error of the Estimate
.528 <sup>a</sup>	.278	.230	4.127

a. Predictors: (Constant), System Integrity

**Table 5b: Multiple linear regression results**

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	22.707	9.977		2.276	.038
System Integrity	.421	.175	.528	2.406	.029

a. Dependent Variable: Management of Credit Risk

The regression results in Table 5 also suggest that the model could explain up to 23% of the variations in the credit risk management practices in the banks in Nakuru Town CBD. Further, from the findings in Table 5b, it is evident that System Integrity ( $\beta = 0.528$ ) had a positive linear relationship with credit risk management practices in the banks in Nakuru Town CBD. This implies that if the system is efficient in availing customer credit information in a reliable, accurate, upto date and timely manner the more the management of credit risk in the commercial banks improved. The findings also suggest that the dependent variable could change by a corresponding number of standard deviations when the respective independent variables change by one standard deviation. Hence, the regression equation for these variables become:

$$y = 22.7 + 0.421X$$

**The high y-intercept suggests that credit risk management is also affected by other factors which were not in the model and that also needed to be investigated.**

**V. Discussions**

It is evident from the findings that the levels of collaboration by the boards and management of the financial institutions on the design of the information sharing systems was agreeable. The financial institutions in the area also had well established credit information sharing protocols although the levels of adherence to them was unsatisfactory among the financial intermediaries. There was a general feeling that insider lending and owner control caused information sharing protocols to be overlooked by the credit staff. However, there were

conflicting views on whether this was due to the need to expedite the credit granting process in order to achieve the banks sales targets ahead of competition., The use of ICT in information sharing had enabled the system to put adequate controls to information so that access to information can be traced to the users so as to monitor the usage of the information. Th findings also imply that unless adequate measures were taken to safeguard the system from compromises, the agency role of the system and its effect on the management of asset portfolio could be attenuated to the point that it could lead to more adverse selection and moral hazard. These findings are consistent with those of the study by Mulumba (2011) which concluded that most of the bank failures resulted from either compromising the system or ignoring the lending procedures in favor of personalities. The practice largely stemmed from the ownership of the banks which were perceived to be associated with the personalities as indicated by Hu *et al.*, (2004) who found a positive correlation between capital share owned by the state or state actors and the level of non performing loans. These arose from unprocedural lending practices like insider lending which according to Berry (2010) was significantly associated with bank failures. Thus, the findings underscore the fact that credit information systems integrity can be considerably compromised by ownership structures which lead to subjective decisions about risks when appraising the borrowers .

## **VI. Conclusions And Recommendations**

Results from regression analysis indicate that system integrity in accessing client credit information could explain upto 23% of the variations in the management of credit risk in commercial banks in the area. System integrity challenges arose from the feeling that insider lending and owner control caused information sharing protocols to be compromised by the credit staff which has led to poor performance of loan portfolios, increase in provision expense and low profitability of the banks. If this is left unattended, it will ultimately have a ripple effect on the growth of the economy. Thus, the study recommends that the stakeholders should set up a system appraisal committee which can regularly monitor and evaluate the performance of the credit information sharing system. Other measures that need to be put in place include stressing adherence to lending procedures and other best practices This is important in ensuring that the system plays it agency role to the highest practicable limits through provision of quality information and reduce the incentives for malpractices thereby becoming a high confidence system.

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