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ABSTRACT

Financial risk exposure impacts on the value of financial firms through changes in cash flows generated by operations, which arise due to interest rate risk exposure direct effect on the cost of capital. In addition, there may be indirect effects of interest rate risk exposure on the competitive position of firms, impacting also on their expected cash flows. Finally, interest rate risk exposure may influence firms' value due to changes in the value of their financial assets and liabilities. Therefore, this study sought to establish the effect of financial risk exposure during interest rate control on financial performance of financial institution in Kakamega County. The study was guided by extreme value theory. Longitudinal research design was used in this study. The study targeted commercial banks in Kenya. Purposive sampling was used to sample commercial banks based on published financial data within study period. The secondary data was collected from audited financial records of commercial banks in Kenya. Panel data was analyzed using inferential statistics which involved testing of hypotheses with help of STATA 15. Inferential analysis was linear regression analysis and correlation analysis. Descriptive analysis such mean and standard deviation was also utilized. The data was presented in form of tables, graphs and models. The results revealed that increase in financial risk exposure and financial risk during interest rate control would results to significant reduction in financial performance of commercial banks in Kenya. The study therefore concluded that financial risk exposure during interest rate control has significant influence on financial performance of commercial banks in Kenya. The study recommended that financial exposure that banks face from risky customers can be reduced by improving on the loaning practices of the bank and closer scrutiny to weed out those likely to default during interest rate control.

Key Words; *Interest Rate Control, Financial performance, financial risk exposure, Commercial Banks*

INTRODUCTION

Commercial banks operate by receiving short term deposits and lending to long term borrowers. The difference between the two rates is the income for the bank and also referred to the interest rate spread. The higher the interest rate spread, the lower the financial risks of a bank while lower interest rate spreads lead to higher financial risks of commercial banks (Ristolainen, 2016). Consequently, if interest rates control does not provide sufficient cover for interest rate spreads, then this is most likely going to lead to financial risk amongst commercial banks. Interest rate vary different basis as some banks will charge a high interest if there is a possibility that a loan provided might be defaulted. Therefore caps attached to interest rates provide some form of control in the financial sector to prevent banks from charging very high and unreasonable Interest rates. This is a policy or regulation provided by most governments through central banks to control the workings of the banking sector since they play a very important role in an economy (Kathomi, 2017).

Interest rates control often lead to market distortion leading to adverse biases by banking institutions where the focus on providing credit to low risk clients which culminates in financial inefficiencies in the intermediation process (Ramsey, 2016). Ramsey further notes that interest rate controls often lead to discriminatory behavior by commercial banks where those who desperately need financial assistance are locked out due to their perceived high risk (Helms &Reille, 2014). Another consequence of interest rates controls is the introduction and rise of alternative lending platforms and avenues. Furthermore, interest rates controls could lead to commercial banks focusing on other low risk ventures such as non-funded incomes, withdrawal of the commercial banks from the market especially those perceived to have high default risk (Helms &Reille, 2014)

Financial exposure is the extent to which an individual or organization is open to risk of suffering a loss in a transaction, or with respect to some investment or set of investments (Kamber & Thoenissen, 2013). In this study financial exposure will be viewed from perspective of bad debt provision, interest rate spread, loan default rates and liquidity issues as a result of control interest rate by the Central bank of Kenya. Financial performance is a subjective measure of how well a bank can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Pandey, 2014). Financial performance of a firm is the measure of the level of the organization's profit or loses within a specified period of time.

According to Alessandri and Drehmann (2010) financial risk exposure is the prospective or current risk of capital and earnings arising from adverse interest rates movements. Excessive interest risk poses a significant threat to banking institutions net income and level of interest sensitive income. Muteti (2014) contends that due to high and uncertain inflation which occurs in 1960s the long run cost of debt become uncertain due to strong correlation that is evidenced in the long term among inflation rate changes and movements in the interest rates. Changes in inflation are directly related to interest rates, therefore in managing firms interest rates the changes in the rate of inflation should certainly know.

Volatility of interest rates has triggered interest rate war which puts the banks earning at risk thus inherit financial exposure hence there is a need to put interest rate within acceptable parameters (Charumathi, 2018). This risk involves financial loss to firms. Interest rate risk exposure can be defined as the risk that its income and/or market value will be adversely affected by interest rate controls. This risk stems from the peculiar nature of the banking business and it can be predominantly attributed to the following reasons. Interest rate risk exposure is based on variation of interest rates and is viewed in

various ways. One way is through variation in interest rates while combining with various short-term funding and loans. A rise in the rate of interest leads to high interest variable payments loan rate and funding follow up is more expensive. This leads to decreased earnings which can lead to financial exposure. The other case refers to cash positions of the company with interest rate that is variable (Bessis 2014).

Nduati (2012) using data collected from the CBK offices he was able to analyze financial exposure of different banks and draw up these conclusions. According to this research interest rate exposure was the single most important determinant in bank's financial performance in Kenya, this goes to explain why the interest rates in Kenya are so high. Flannery, (2013) sought to study how the varying market interest rates affected the overall performance of commercial banks. Using data collected from over 70 US commercial banks, Flannery was able to compare the assets owned by different banks to the interest rates offered by the market. After statistical analysis, these banks profitability was determined to be responsive to the level of market interest rates. In addition to this, a change in the market rates was accompanied with a response by the bank revenues and cost, which always cancelled each other.

Kenya has been identified to become weaker than expected in economic growth. Lending and borrowing interest rates controls have already impacted corporate earnings, with renowned listed financial service providers reporting reduction in earnings in each share. This has effectively slashed down the dividends earned by shareholders. In the Nairobi Stock Exchange, most of listed companies have realized worst fall in the year 2016 2017 financial year particularly the banking stocks. This happened particularly after the government imposed controls on lending and deposit rates (Osamwonyi & Kasimu, 2013).

The Central Bank of Kenya had already sound a warning that the poor performance of the listed institutions The Central Bank of Kenya had cautioned that the poor performance of listed firms would spill over the next financial year (2017 2018). So far Barclays' recorded a drop in net profit generation from Kshs. 8.4 billion in 2014/2016 financial year to Kshs.7.39 billions 2016/2017 financial years. Stanbic Holdings Kenya on the other hand recorded a 10 per cent drop in net According to Stanbic Bank chief executive increased regulation in the banking sector is one of the factors for the Group's performance (Cherono, 2018).

Statement of the Problem

Financial risk exposure impacts on the value of financial firms through changes in cash flows generated by operations, which arise due to interest rate risk exposure direct effect on the cost of capital. In addition, there may be indirect effects of interest rate risk exposure on the competitive position of firms, impacting also on their expected cash flows. Finally, interest rate risk exposure may influence firms' value due to changes in the value of their financial assets and liabilities. Prior to fully regulated interest rates, most commercial banks mostly set their base rates and gave them to their customers with the biggest muscle. Such subsequent increased payments stressed borrowers but enabled banks to continue enjoying high profit margins. In contrast the full effect of the new and how it has disbanded banks can be seen clearly from the third quarter trading results of the year 2017 that were released by the banks (KBA, 2017). The banks that dropped in profitability or posted losses have been left stranded as they cannot push the interest rates up so as to record more revenue. According to Kenya Commercial Banks Association Report (2016), Low interest rates in the long run may negatively affect profitability and solvency of financial companies which promise minimum nominal returns over the longer term.

Extant empirical studies have reported mixed and inconclusive relationship between financial risk exposure and financial performance. Jorge and Augusto (2016) found that financial exposure has significant influence on financial performance of

listed financial firms in selected European firms. Similar results locally were established by Muriithi, Waweru and Muturi (2016) as well as Iyakaremye (2015). However, Maniagi (2018) found that exposure to liquidity risk and foreign exchange risk has no significant effect on financial performance of commercial banks in Kenya. Toroitich (2018) failed to establish significant negative effect of credit risk exposure on financial performance of commercial banks in Kenya. This research intended to fill the knowledge gap by examining influence of financial exposure during interest rate control on financial performance of Commercial banks in Kenya

Research Objective

The objective of the study was to examine influence of financial exposure during interest rate control on financial performance of Commercial banks in Kenya. The study was guided by the following research hypothesis;

- **H$_0$:** Financial exposure has no significant influence on financial performance of Commercial banks in Kenya.

LITERATURE REVIEW

Theoretical Framework

According to Paul Embrechts (1999), Extreme value theory (EVA) is a branch of statistics dealing with the extreme deviations from the median of probability distributions. It seeks to asses from a given order sample of a given random variable, the probability of events that are more extreme than previously observed. The financial industry including banking and insurance is undergoing major changes. The industry is increasingly exposed to catastrophic losses for which requested cover is only available. An increasing complexity for financial instruments calls for sophisticated risk management tool.

Extreme event occur when a risk takes values from the tail of its distribution, extreme value theory is a consistent tool which attempts to provide us with the best possible estimate of the tail area of the distribution, Wainnaina & Waititu (2014). Uppal (2013) pointed out that there are two ways of modelling extremes of stochastic variable using the extreme value models. One approach is to divide the sample into blocks and then obtain the maximum from each block, which is referred to as the block maxima method. The distribution of the block maxima can be modelled by fitting it into Generalized Extreme Value (GEV) model. Gravril & Altar (2009) applied exchange rate returns of four currencies against the Euro to analyze the relative performance of several VaR models and Extreme Value Theory.

They revealed that in extreme market conditions, extreme measures are needed and their studies came up with the evidence that no single measure can perform proper for both the centre and the tails of a financial risk exposure. This theory expand the knowledge of financial risk exposure as it indicate the control of interest rate exposes commercial banks to various financial risk associate with interest rate control.

Conceptual Framework

According to Mugenda and Mugenda (2003), a conceptual framework helps the reader to quickly see the proposed relationships between the variables in the study and show the same graphically. In this study, financial risk exposure was used as independent variables. Financial performance measured by return on asset (ROA) as shown in Figure 1.

Financial risk exposure	Financial Performance
▪ Provision of Bad debts ▪ Loan Default Rates	▪ ROA
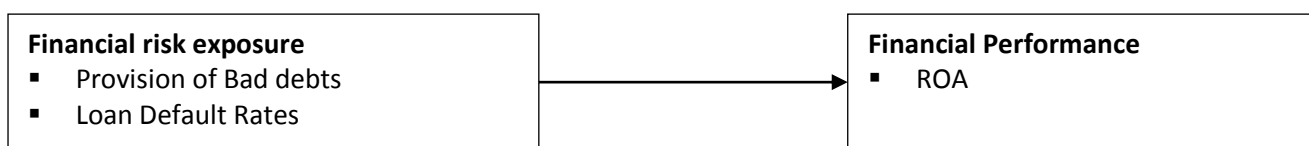
Independent Variable   Dependent Variable

Figure 1: Conceptual Framework

Empirical Studies

Okwany (2017) investigated the effects of interest rate control on the operating performance of commercial banks in Kenya with a case study of KCB Bank Kenya Limited (KCB-K). Exploratory research was directed by three specific objectives namely: the effect of capping of interest rate on financial risk exposure performance of the bank, the effect of interest rate risk exposure on bank profitability of KCB-K and the effect on performance of the portfolio of non-performing loans in KCB-K. The scope of the study was limited to a case study of KCB Bank Kenya. Descriptive research design was applied in the study. The targeted population in the study was the employees of KCB-K at selected branches and Head Office functions. Questionnaires were used for data collection and were self-administered. The main findings of the research were that interest rate capping decreased financial risk exposure, led to a reduction in the number of approved loan facilities, increased selection criteria for new loans and had an effect on increase in non-performing loans.

Guyo (2017) sought to determine the effects of interest rate capping on financial performance among commercial banks in Kenya. The study adopted descriptive research design. The population of the study was the forty-two commercial banks registered with the Central Bank of Kenya. The study used secondary data collected from the Central Bank of Kenya. The study established that there was significant negative relationship between interest rate risk exposure as well as uptake of loans and financial performance among commercial banks. From the findings, the financial performance among commercial banks had declining trends in the periods after introduction of interest rate control

Wambari and Mwangi (2017) analyzed the effect of interest rates capping on the financial performance of commercial banks in Kenya. The study adopted an explanatory research design. This study adopted a census research design; of all the 43 commercial banks in Kenya. The study also used secondary data.

The study established that financial exposure as a result of interest rate risk negatively influence the financial performance of commercial banks in a positive way. Deposit growth affects performance of commercial banks as it increases liquidity of commercial banks. Following study results, it was recommended that commercial banks in Kenya should keenly manage their lending interest rates given that lending interest ratio is directly related to performance

Ahmed, Rehan, Chhapra and Supro (2018) evaluated the impact of interest rate fluctuations on the profitability of banks. Thus, annual data of seven years from 2007 to 2014 has been taken for 20 banks operating in Pakistan. The sample banks are taken on the basis of highest market share and return. To make substantially noteworthy results study uses Correlation and Regression analysis in order to evaluate the impact of financial risk exposure on performance. The result shows that customer deposits and financial exposure are negatively affecting the profitability of banks, while financial risk exposure having positive influence over profitability of banks

Waseem and Sattar (2014) analyzed the effect financial exposure pose on the profit generated from four of the major commercial banks in Pakistan between 2008 and 2012. They focused their study on Pearson correlation technique, where, they related the interest rates provided by each individual bank with the profits experienced at the end of a financial year. Their conclusion was, bank's profitability is dependent on financial exposure as a result of monetary tools enforced by the banks, and in this case, the monetary tool was interest rate control. A similar study was done by Apir (2014), who highlighted just how interest rate risk exposure affects the performance of Nigerian Banks. To identify the causality line between the interest rate and banking, Apir used analysed data from selected banks in Nigeria. In his findings, the volatility of interest rates affects the overall financial performance of banks.

Kimita (2016) sought to determine the effect of interest rate exposure on the Financial Performance of Commercial Banks in Kenya. All 42 operational commercial banks in Kenya as at the year 2014 were considered. Therefore, a census was used. To achieve the objective of this study, secondary data sources were used to gather information. The study covered a period of 10 years, from the year 2006 to 2014. The findings on the regression coefficients established that interest rate exposure had an insignificant positive relationship with the financial Performance of Commercial banks.

Konya, Jagongo and Kosimbei (2018) sought to establish the effect of financial risk exposure on financial performance of commercial banks in Kenya. The Berger and Hannan approach was used to establish the relationship between bank size, financial exposure and the financial performance of commercial banks in Kenya. Financial exposure has been considered to have impact on the financial performance of commercial banks in Kenya.

METHODOLOGY

The study assumed a longitudinal research design to collect and analyze data. To achieve this, the study employed a panel data approach and analyzed the effect of interest rate control on financial performance of commercial banks in Kenya during the period 2014 to 2018. The target population for this study was 41 commercial banks in Kenya. The study sampled 38 commercial banks in Kenya. Therefore, the study used purposive sampling techniques. Two criteria were used during purposive sampling technique. The first criteria was

commercial banks that are not under receivership or statutory management during study period and the second criteria was commercial banks that have published their financial reports during the study period (2014-2018). The research utilized secondary Audited income statements, statement of financial position and cash flow statements were collected from the central bank of Kenya and commercial banks websites. A data collection form was used for initial recording of the data. Data was collected for the five year period ending 31st Dec 2018. The study extracted data containing quantitative details from financial institutions, the panel data collected was analyzed quantitatively through a mathematical and regression equations and this was solved by using a statistical tool (STATA 15). Linear regression analysis was used to determine the influence of independent variable on the dependent variable. The following regression model was used:

$ROA_{it} = \alpha + \beta_1 LU_{it} + \varepsilon_{it}$

ROA_{it} = Return on assets for bank (i) in period (t)

α = Determines the level of fitted lines

β_1 = Regression coefficient

LU_{it} = Measure of financial risk exposure (i) in period (t)

ε_{it} =Error Term

FINDINGS AND DISCUSSION

The descriptive statistics entailed Minimum, Maximum, Mean and standard deviation. The results were as shown in Table 1.

Table 1: Financial Risk Exposure and Return on Investment

	2014		2015		2016		2017		2018		Summary	
Statistics	FRE	ROA	FRE	ROA	FRE	ROA	FRE	ROA	FRE	ROA	FRE	ROA
Minimum	0.01	-1.59	0.01	-1.13	0.01	-2.05	0.00	-0.20	0.00	-3.90	0.002	-3.90
Maximum	1.26	28.00	9.84	17.00	0.45	23.00	3.08	16.27	1.40	19.00	0.54	28.00
Mean	0.23	5.53	0.60	5.22	0.12	5.20	0.29	4.87	0.20	4.46	0.29	5.06
Std Dev	0.34	6.41	2.09	4.78	0.12	5.70	0.67	4.83	0.30	5.83	0.10	5.46

FRE: Financial Risk Exposure;   **ROA**: Return on Assets

Table 1 showed summary statistics between 2014 and 2018 for each variable used in the study. From Time series summary, Log of financial risk exposure ranged from 0.002 to 0.54 with a mean of 0.29 and standard deviation of 0.10. Return on assets ranged from -3.9% to 28.0% with a mean of 5.05% and standard deviation of 5.48%. Figure 2 showed scatter plot for return on asset between 2014 and 2018.
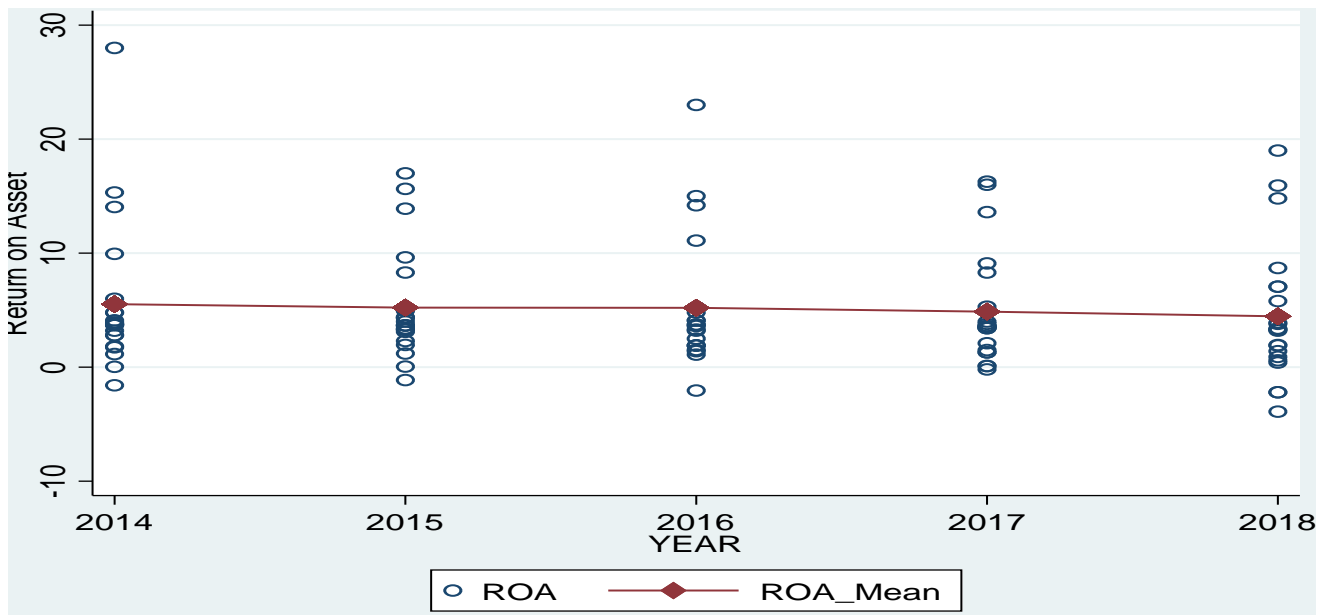

Figure 2: Scatter Plot for Financial performance

Panel Unit Root Test

The study carried out a unit root test to ensure that there was no presence of unit roots (the panel data are stationary). Unit root test were conducted to ensure that the series were stationary and check the problem of having a spurious regression. A variable can only be said to be stationary when it has no unit root. The study used Phillips-Perron which is based on hypothesis

Ho: All panels contain unit roots

Ha: At least one panel is stationary

The results were as shown in Table 2.

Table 2: Unit Root Tests without Difference (Levin Lin–Chu

Variable	Statistics	P-Value	Significant
Financial risk exposure	27.6300	0.000	**
Return on Asset	44.3165	0.010	*

* sig at 5% level, ** sig at 1% level

Table 2 showed the summary results for Stationarity test. A p-value of more than 0.05 indicates the presence of unit roots while a p-value of less than 0.05 was an indication that there was no presence of unit roots for Phillips-Perron tests. The results indicated that there was absence of unit root for the study variables. This showed that all variables are stationery and there was no problem of unit root and the results can for further inferential statistics.

Inferential Analysis

Simple linear regression analysis was conducted to establish the relationship between financial risk exposure and financial performance of Commercial banks in Kenya. The R square was used to establish contribution of financial risk exposure on financial

performance. The Correlation coefficient (R) was used to establish the relationship between variables. The results were as shown in Table 3.

Table 3: Regression Results of Financial risk exposure on financial performance

					Model Summary			
Model	R	R Square	Adj R Square	Std. Error of the Estimate	R Sq. Change	F Change	df1, df2	Sig. F Change
1	.367[a]	.134	.122	.503976	.134	4.517	1,158	.005

a. Predictors: (Constant), Financial exposure

		ANOVA[a]				
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.147	1	1.147	4.517	.005[b]
	Residual	40.131	158	.254		
	Total	41.278	159			

a. Dependent Variable: Financial performance
b. Predictors: (Constant), Financial exposure

		Coefficients[a]				
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.311	.084		3.720	.000
	Financial exposure	-.147	.069	-.367	-2.125	.005

a. Dependent Variable: Financial performance

The analysis yielded an R coefficient of -0.367, P=0.005. This illustrated that there was a statistically significant negative relationship between financial risk exposure and financial performance of Commercial banks in Kenya. The findings are in line with Konya, Jagongo and Kosimbei (2018) revealed that financial exposure have impact on the financial performance of commercial banks in Kenya. Ntiamoah, Oteng, Opoku & Siaw (2014) showed that there are high correlation between the constructs of loan default rate and profitability of the various microfinance institutions.

The results revealed that there was a statistically significant positive relationship between financial exposure and financial performance of Commercial banks in Kenya. Financial exposure accounted for 13.4% (R^2 = 0.134) variations in the financial performance of Commercial banks in Kenya. The F value was more than zero, F=4.517, P=.005, therefore, Financial exposure is a significant

predicator of financial performance of Commercial banks in Kenya during interest rate control.

Results show that financial exposure had a negative, linear and significant (p-value is less than 0.05) association with the financial performance of Commercial banks in Kenya {regression coefficient, B=-0.147, and t-test value, t=-2.125}. The results were represented in the following model:

$Y = \beta_0 + \beta_3 X_3 + \varepsilon$
Where Y= financial performance,
β_0= 0.311(constant)
β_3= -0.147
X_3= Financial exposure
Substituting equation above with values, the model becomes: $Y= 0.311+ -0.147X_3+\varepsilon$

From the above model, the constant had coefficient of 0.311, p=0.000, this implied that in the absence of financial exposure, financial performance would be positively at 0.311. This financial performance would be significant (P<0.01). Further, financial exposure had regression coefficient of -0.147,

P=0.005. This implies when everything is held constant, a unit increase in the financial exposure during interest rate control would results to a significant decrease in financial performance by 14.7%.

The results are similar to Waseem and Sattar (2014) who analyzed the effect financial exposure pose on the profit generated from four of the major commercial banks in Pakistan between 2008 and 2012. Their conclusion was, bank's profitability is dependent on financial exposure as a result of monetary tools enforced by the banks, and in this case, the monetary tool was interest rate control. However, Kimita (2016) established that interest rate exposure had an insignificant positive relationship with the financial Performance of Commercial banks.

CONCLUSION AND RECOMMENDATIONS

The study concluded that during interest rate control, financial exposure influenced financial performance of commercial banks in Kenya. The study showed that during interest rate control, increase of financial exposure would results to significant decrease in financial performance of commercial banks. Interest rate control is related with various financial exposures such as non-performing loans. Further, during interest control, commercial banks are unable to mitigate various risks in the market due to limited resources. This implies that, commercial banks would suffer returns from their assets.

The study recommended that financial exposure that banks face from risky customers can be reduced by improving on the loaning practices of the bank and closer scrutiny to weed out those likely to default during interest rate control. Further, the study recommended commercial banks to educate their clients on borrowing terms and conditions as this helps clients make accurate decisions easing reliance on collateral. The study also recommended strict system related credit performance monitoring as it ensures better loan performance.

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Page: 1388

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