THE EFFECT OF CREDIT RISK MANAGEMENT ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN TANZANIA; A STUDY AT NATIONAL MICROFINANCE BANK PLC (NMB)

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ABSTRACT

The study has examined the effect of credit risk management on the profitability of commercial banks in Tanzania using NMB Bank PLC as the case study. The study has used secondary data collected from published financial statements spanning the period between 2010 and 2020 on a quarterly base that count to the total of 44 numbers of observation and used for the analysis. Financial profitability of the banks has been proxied by return on assets. Independent variables included, nonperforming loan ratio, capital adequacy ratio, total loans to total deposits ratio and loan loss provision to non-performing loan ratio. using Johansen Maximum Likelihood Co-Integration Test and Error Correction Regression. Results models shows loan deposit ratio, loan loss provisions, non-performing loans and capital adequacy have effect in long run to the return on assets of commercial bank in Tanzania.

Key words: ***Profitability, Credit Risk Management & Error Correction Regression***

1.0 Introduction

From the preceding background, credit risk has been shown to be behind the bank related financial crisis. It is the most critical risk among the risks that banks face. Research has shown that credit risk management is crucial for the effective performance of banks. Thus, managers acting in the best interest of the shareholders should manage the credit risk items which minimizes the potential failures that are associated with mismanagement of the underlying indicators. Researches have focused on identifying determinants of credit risk and how they affect performance of the banks. However, while most research has been done from the western economies, limited research is done in developing countries like Tanzania. The few researches done on banks in Tanzania, for example Quin and Pastory (2012), Kaaya and Pastory (2013), Pastory and Mutaju (2013), and Abdallah et al. (2014) differ in a number of ways some of which include methodological differences and coverage. Several of them used Panel data regression. Due to changes in technology and regulations in Tanzania, follow up studies are important but also with time, more and more banks open operations and grow. This enables researchers to use other models in estimating the effect of the credit risk variables on banks performance. Therefore, the present study fills this gap by using a wider sample.

2. LITERATURE REVIEW

2.1 Theoretical Literature Review

2.1.1 Modern Portfolio Theory (MPT)

The first theory is the modern portfolio theory which was developed by Harry Markowitz who published the theory in *Journal of Finance* in 1952. The theory argues that firms can manage credit risks by investing in portfolios that can maximize expected returns based on a given level of market risk. The MPT shows that investors and firms can construct a portfolio of multiple assets that will maximize returns for a given level of risk. Likewise, given a desired level of expected return, an investor can construct a portfolio with the lowest possible risk. It is important to diversify investment in different portfolios so as to reduce levels of risks (Cited in Fali et al. 2020). The MPT places emphasis on the need to identify portfolios which give the highest return for managing a particular level of risk. However, the MPT does not specifically show how to analyze and manage credit risk. The MPT will be complemented by the financial risk's theory.

2.1.2 Financial Risks Theory

The theory of financial risks identifies types of financial risks that affect financial sustainability of firms. According to Arif and Showket (2013) and Banks (2014) financial risk is measured by three indicators namely credit risk, liquidity risk and market risk. Credit risk can occur when the counterparty fails to meet obligations when due. Market risk is the risk of loss due to adverse changes in the market prices and variability of transactions. It is a risk of economic loss in an attempt to secure cash that is important for business operations. This theory will be applied in this study to assess the effects of credit risk management on financial performance of commercial banks.

2.2 Empirical Literature Review

Various studies have assessed the effect of credit risk management on financial performance of commercial banks. Kaaya and Pastory (2013) researched credit risk and commercial banks in Tanzania, using panel data analysis. The study used ROA as performance indicators and LLP/TL, LLP/NPL, LLP/NPL and NPL/TL ratios as credit risk indicators. The study concluded that the increase in credit risk tends to lower firm performance; both indicators produced negative coefficients which tend to lower profit level. From a few samples of studies reviewed above it is evident that the best and widely used indicator of banks performance is ROA and the most used indicators of credit risk performance are NPL/TL, CAR, TL/TD and LLP/NPL ratios.

In addition to the above, Million, Matewos and Sujata (2015) studied the impact of credit risk on profitability performance of commercial banks in Ethiopia. The study involved 8 commercial banks for the period of 12 years. The study used ROA as performance indicators and four credit risk indicators; NPL/TL, CAR, TL/TD and LLP/NPL ratios. Findings of this study showed that NPL/TL and CAR were significant and negative to ROE and ROA, LLP/NPL was significant and positive to performance while TL/TD had insignificant effect on performance.

From a profitability perspective, Kithinji (2010) examined the effects of credit risk management on profitability of commercial banks in Kenya. In this study performance indicator used was ROA and credit risk indicators were NPL/TL and TL/TA ratios. The regression results indicated that there was no relationship between profits, amount of credit and the level of nonperforming loans.

Prakash and Sharma Poudel (2012), the impact of credit risk management on financial performance of commercial banks in Nepal, this study try to explore various parameters pertinent to credit risk management as it affects banks' financial performance. Such parameters

covered in the study were; default rate, cost per loan assets and capital adequacy ratio. Financial reports of 31 banks were used to analyze for eleven years (2001-2011) comparing the profitability ratio to default rate, cost of per loan assets and capital adequacy ratio which was presented in descriptive, correlation and regression was used to analyze the data. The study revealed that all these parameters have an inverse impact on banks' financial performance; however, the default rate is the most predictor of bank financial performance. The recommendation is to advise banks to design and formulate strategies that will not only minimize the exposure of the banks to credit risk but will enhance profitability.

Moreover, a study by Fredrick (2013) analyzed the impact of credit risk management on the financial performance of commercial banks in Kenya and also attempted to establish if there exists any relationship between the credit risk management determinants by use of CAMEL indicators and financial performance of commercial banks. This study concludes that the CAMEL model can be used as a proxy for credit risk management.

Furthermore, Qin and Pastory (2012) studied the commercial banks' profitability position using one-way ANOVA and concluded that there was no significant difference in the profitability position of the banks reviewed. Additionally, Kolapo et al. (2012) did a study on credit risk and commercial bank's performance in Nigeria. The study used a panel data approach. The study used NPL/TL, LLP/NPL and TL/TD ratios to determine the credit risk. On performance measurement the study used ROA as the only indicator. The study found out that there was a negative relationship between ROA and NPL/TL and LLP/NPL and a positive relationship between ROA and TL/TD ratio.

Li and Zou (2014) performed a study on the Impact of Credit Risk Management on Profitability of Commercial Banks: A Study of Europe. The study involved 47 largest commercial banks in Europe and used ROE and ROA as performance indicators and CAR and NPL/TL ratio as credit risk indicator. Using the panel data regression analysis model their findings indicated presence of significant negative relationship between NPL/TL ratio while CAR was insignificant.

Gizaw et al. (2015) studied the impact of credit risk on profitability performance of commercial banks in Ethiopia. The study involved 8 commercial banks for the period of 12 years. The study used both ROE and ROA as performance indicators and four credit risk indicators; NPL/TL, CAR, TL/TD and LLP/NPL ratios. Findings of this study showed that NPL/TL and CAR were significant and negative to ROE and ROA,

Getahun, Anwen, and Bari (2015), Credit Risk Management and Its Impact on Performance of Commercial Banks: In Case Ethiopia, the purpose of this paper is to investigate the relationship between credit risk management and its impact on performance of commercial banks in Ethiopia. This study is primarily based on secondary data. Secondary data were collected from nine (09) commercial banks in Ethiopia. The panel data of a six-year period from 2009 to 2014 from the selected banks were used to examine the relationship between credit risk and performances. The findings reveal that there is a strong relationship between credit risk management and commercial bank performance in Ethiopia.

Abbas (2014), Credit Risk Exposure and Performance of Banking Sector of Pakistan, this research has taken into account the impact of credit risk on the performance of the banking system of Pakistan. Results of fixed effect regression analysis on panel data for the period of 2006-2011 has revealed that credit risk measured by ratio of Nonperforming loans to total loan and loan loss provision to non-performing loan negatively affect performance variables of ROA and ROE. Hence the more a bank is facing credit risk the more deterioration in performance it

experiences. The effect of increase in ratio of total loan to total deposits significantly increases banks profitability.

In connection to the above, a study by Simon (2017) assessed the impact of credit risk management on the performance of commercial banks in Eritrea. The main indicators used in this study are Return on Assets (ROA), Non-performing Loans Ratio (NPLR), Capital Adequacy Ratio (CAR), Loan and Advances Ratio (LAR) and Loan Loss Provision Ratio (LLPR). The researchers collected data from Commercial Bank of Eritrea and Housing and Commerce Bank of Eritrea from 1998 to 2015. Descriptive and panel data regression analysis are used in order to test the relationship between the four indicators and the performance of commercial banks in Eritrea. The findings show that credit risk management is inversely associated with bank performance. The nonperforming loan, and loan and advances ratios significantly and negatively affected performance of the commercial banks. The result indicates that loan and advances ratio are negative but statistically insignificant. There is a positive relationship between CAR and ROA. The significant positive relationship between loan loss provision and commercial banks performance in this study could indicate the presence of potential earning management activities by bank managers.

2.6 Conceptual Framework

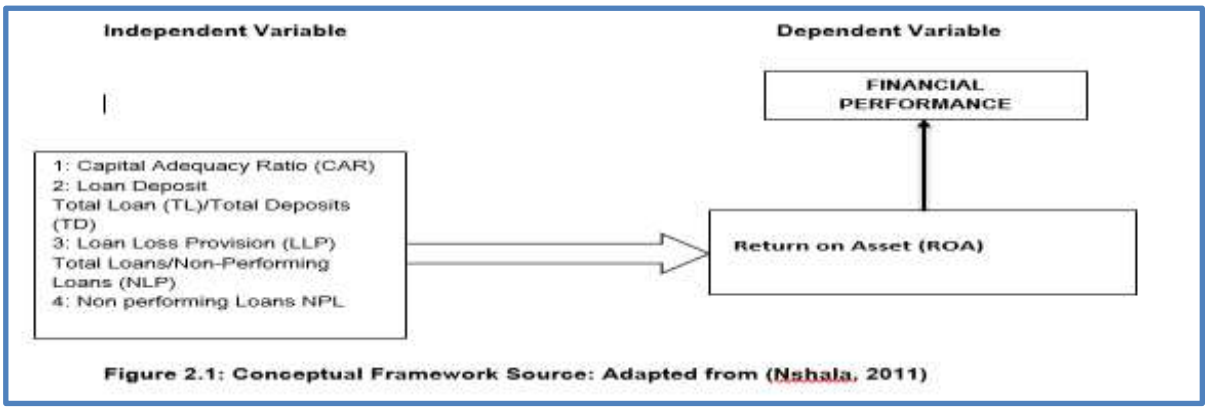

Figure 2.1: Conceptual Framework Source: Adapted from (Nshala, 2011)

3.1Design

The cross-sectional study design was useful to study the effect of credit risk management on the financial performance of commercial banks in Tanzania.

3.2 Research Approach

The study has applied Quantitative Approach because the data are in a numeric form, we can apply statistical tests in making statements about the data.

3.3 Research Area

The research has been carried out in Tanzania, specifically in NMB BANK PLC in order to determine the effect of credit risk management on the financial performance of commercial banks by analyzing data from the 10 years' period from 2010 to 2020.

3.4 Data Collection Method

The study has use secondary data which are audited financial statements of NMB commercial bank over the study period were collected from Company websites and from the company's head offices.

3.5 Model Specification

The linear regression model examined the effect of credit risk management on the financial performance of commercial banks a multiple linear regression model. And it is identified in this research that in this model ROA is dependents variable while NPL/ TL, LLP /NPL, TL /TD, CAR are independents variables the above analysis is expressed in the form of a functions ROA = f (NPL/ TL, LLP /NPL, TL /TD, CAR)

$$ROA = \beta_0 + \beta_1\left(\frac{NPL}{TL}\right) + \beta_2\left(\frac{LLP}{NPL}\right) + \beta_3\left(\frac{TL}{TD}\right) + \beta_4(CAR) + \varepsilon_t \dots\dots\dots\dots (1)$$

Where;
ROA =Return on Assets
NPL/ TL = Non-Performing Loans Ratio
LLP /NPL = Loans Loss Provisions Ratio
TL /TD = Loans to Deposits Ratio
CAR = Capital Adequacy Ratio
£ = Is the error term which accounts for other unobserved factors
βo = Slope of the regression when other factors are kept constant
β1, β2, β3, β4= Coefficient of regression when other factors are kept constant

3.6 Estimation Techniques

Quantitative data have been employed to analyze statistical data analysis. The methods have been used for this analysis because it can take any data from any kind of file and use them to create tabular reports, charts, perform descriptive statistics and carry out complex statistical analysis. This study has adopted descriptive statistics deemed very helpful in establishing an opinion about the behavior of time series; correlation analysis will be described to identify correlation between independents and dependents variables. Unit root is the standard way to test stationarity of data Augmented dickey fuller (ADF). ARDL has been used as principal econometric techniques to test the hypothetical relationship between the variables. Data presentation has been done using tables and graphs.

3.6.1 Descriptive Analysis

The descriptive analysis has involved means, kurtosis, skewness, standard deviations, maximum and minimum values of the study variables. Therefore, kurtosis, skewness, means, median, standard deviations, maximum and minimum value, and range of all variable shall be presented

3.6.2 Time Series Analysis

The data nature lets the research to apply time series analysis. The research used preliminary tests such as the unit root test (Augmented Dickey-Fuller test), Optimal Lag Length Selection, and Co-integration test to see the fitness of data for further time series tests. Additionally, the study made the test of Granger causality, Vector Auto-Regressive (VAR), or Vector Error Correction Model (VECM) depends on the co-integration of variables to achieve the desired results.

4. 0 PRESENTATION AND DISCUSSION OF FINDINGS

4..1 Tests for Stationarity

The test of Augmented Dickey-Fuller (ADF) was used to identify the presence of stationarity on the time series data. The study opted to use ADF since ADF can take care of correlation in error term by adding lags. ADF test was conducted and findings are indicated in Table 4.3. The study applied the following hypothesis to perform the unit root test;
Null Hypothesis: Time series data is non-stationary (a problem of a unit root)
Alternative Hypothesis: Time series data is stationary

Table 4. 3: ADF Unit Root Tests for Stationarity: Level Variables

No	Variable	ADF test statistic			Decision
		Intercept	Intercept & trend	None	
1	Return on assets ROA	-6.122388	-6.291224	-4.173190	Accept H_0
2	Loan loss provisions LLP	-3.926249	-3.839050	-2.893102	Accept H_0
3	Non-performing loan NPL	-4.069224	-5.076016	-2.823178	Accept H_0
4	Capital adequacy CAR	-3.515200	-3.739261	-2.866845	Accept H_0
5	Loan deposit LDR	-3.062392	-5.483845	2.670009	Accept H_0
	Critical values: 5% level	2.931404	3.518090	1.948686	

Source: Author's Estimations

Findings in Table 4.3 indicate the result of the test of ADF where the study used Mackinnon approximate p-value for Z(t) and the value of Z(t) to test the stationarity of time series data. The condition for the stationarity of time series data is that test statistic should be greater than the critical value at 1% or 5% or 10% and the p-value should be significant at least on a 5% level. Findings in Table 4.3 reveal that variables failed to meet the condition of stationarity (Mackinnon approximate p-value for Z(t) >5%). Therefore, null hypothesis i.e., time series data is non-stationary, cannot be rejected. Since all variables in the study are non-stationary, then, further analysis cannot be implemented on them. If a time series has a unit root problem, the first difference of such a time series is 'stationary'. Hence, the first difference of the variables should be taken to solve the problem. The first difference of a time series is the series of changes from one period to the next. Therefore, first-order differencing of time series variables was made and findings are presented in Table 4.4.

Table 4. 4: ADF and PP Unit Root Tests for Stationarity: First Difference

No	Variable	ADF test statistic			Decision
		Intercept	Intercept & trend	None	
1	Return on assets ROA	-6.249700	-6.270052	-6.340862	Reject H_0
2	Loan Loss Provisions LLP	-7.724928	-7.627268	-7.808487	Reject H_0
3	Non-performing loan NPL	-6.802383	-6.114368	-6.825679	Reject H_0
4	Capital adequacy CAR	-7.904464	-7.975201	-7.903742	Reject H_0
5	Loan Deposit LDR	-4.646743	-5.043740	-4.724302	Reject H_0
	Critical values: 5% level	0.000000	0.000000	0.000000	

Source: Author's Estimations

Since, Mackinnon p-value for Z(t) < 5% (for all variables), then, null hypothesis i.e. time series data is non-stationary, is rejected. Therefore, the exchange rate, inflation rate, interest rate and stock price index are stationary at the first difference, and hence, further analysis can be performed on them.

4.2 Optimal Lag Length Selection

Table 4.5: Selection-Order Criteria

Sample: January 2010 - December 2020 Number of observations = 40

Lag	LogL	LR	FPE	AIC	SC	HQ
0	266.0502	NA	1.09e-07	-4.679468	-4.582378	-4.640075
1	943.7051	1294.805	8.07e-13	-16.49473	-16.00929*	-16.29777
2	971.9902	52.02444*	6.48e-13*	-16.71411*	-15.84031	-16.35958*
3	986.2804	25.26299	6.70e-13	-16.68358	-15.42142	-16.17148
4	996.5172	17.36603	7.47e-13	-16.58066	-14.93015	-15.91100
5	1004.622	13.16989	8.67e-13	-16.43967	-14.40080	-15.61244
6	1011.652	10.92194	1.03e-12	-16.27950	-13.85227	-15.29469
7	1026.015	21.28754	1.08e-12	-16.25026	-13.43467	-15.10789
8	1038.221	17.21974	1.18e-12	-16.18252	-12.97857	-14.88258

Source: Researcher (2022)

Table 4.5 gives the results of the preferred lag length in which FPE, AIC, HQIC, and SBIC prefer one (1) lag, and LR prefers four (4) lags. The decision criteria of optimum lag length are purely a choice of the researcher; this is informed by the fact that none of the criteria is

considered superior to the others. This means that there is no higher criterion than the other since the lower the lag number the better the model; therefore, the study opted AIC due to its efficiency characteristics (it has the lowest value among the three criteria), thus the study chose one lag length to be used in this model as the optimal lag length. The decision criteria for optimal lag length are also supported by FPE, HQIC, and SBIC.

Autoregressive Distributed Lag Cointegration Test

Results of the ARDL bound test for cointegration, which is based on the Wald-test (*F*-statistic) are reported in Table 4.6. In this test, as has been discussed, the lower critical bound assumes all the variables are *I* (0) meaning that there is no cointegration relationship between the examined variables, whereas the upper bound assumes that all the variables are *I*(1), meaning that there is cointegration among the variables. The Table also reports the null hypothesis of no cointegration (H_0) and the alternative hypothesis (H_a) of cointegration amongst the variables. The fact that the computed *F*-statistic $(F = 5.67)$ is greater than the upper bound critical value, at all levels of significance, i.e. 10 percent, 5 percent, and 1 percent; then the H_0 is rejected, meaning that the variables in the model are cointegrated. Similarly, the computed *t*-statistic $(F = -5.05)$ is greater than the upper bound critical value, at all levels of significance, also rejecting the H_0 of no cointegration among the variables in the model. The implication is that the bounds testing approach provides a proof that there is indeed a long run relationship between the variables in the model and therefore the long run cointegration model and coefficients can be estimated and specified.

Table 4. 6: ADL Bounds and Critical Value Bounds Test for Cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signify.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.677725	10%	3.03	4.06
K	4	5%	3.47	4.57
t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signify.	I(0)	I(1)
t-statistic	-5.056700	10%	-3.13	-4.04
		5%	-3.41	-4.36
H_0:	$\varphi_1 = \varphi_2 = \cdots = \varphi_5 = 0$ A Long-run relationship does not exist			
H_a:	$\varphi_1 \neq \varphi_2 \neq \cdots \neq \varphi_5 \neq 0$ A Long-run relationship exists			

Source: Author's Estimations

By analyzing the probability value of Coint Eq(-1)* which 0.01 that is less than 0.05 it shows it is significance also by looking F-bound statistics and T -bound statics which are all greater than their upper bound value that explain that it is also significance . This means that the system is correcting the preceding period's disequilibrium at a rate of 1%. According to results in Table 4.6 A percentage change in both variables has no effect in the change of performance of commercial bank at short run.

Table 4. 7: ARDL Long-Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.081333	0.034374	2.366138	0.0235
@TREND	-0.000853	0.000358	-2.385987	0.0224
ROA (-1) *	-0.766841	0.151649	-5.056700	0.0000
NPL**	-0.025834	0.071255	-3.625630	0.0055
LDR**	-0.000430	0.002714	-0.158425	0.8750
CAR**	-0.557706	0.173993	-3.205337	0.0059
LLP**	-0.011711	0.005746	-2.037408	0.0065
p-value incompatible with t-Bounds distribution.				
Variable interpreted as Z = Z (-1) + D(Z).				

4.3 Autoregressive Distributed Lag Error Correction Model

Since variables in the model are cointegrated, then the ARDL-ECM is estimated in order to test for the speed of adjustment and how the variables in the dataset converge towards equilibrium in the long-run. Table 4.7 shows the top 20 of different ARDL models evaluated by E-Views and the final selected model as chosen by the Akaike Information criterion. The table shows that the final model used in the study is an ARDL (2, 0, 1, 1, 2, 2, 1, 2, 0, 2, 0) model. Results of the short run ARDL version of the ECM for the revenue model associated with the ARDL (2, 0, 1, 1, 2, 2, 1, 2, 0, 2, 0) are reported in Table 4.7.

Table 4. 7: Autoregressive Distributed Lag Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ΔNPL_1	0.723159***	0.142469	5.075923	0.0000
ΔNPL_2	0.470706***	0.136732	3.442555	0.0021
ΔCAR	0.001814	0.001713	1.058804	0.2994
LLP	0.004359***	0.001187	3.673364	0.0012
ΔLLP_1	0.001611	0.001288	1.250787	0.2231
ΔLDR	0.006286***	0.001908	3.293708	0.0031
ΔLDR_1	0.007442***	0.001396	5.331569	0.0000
ΔROA	0.004679***	0.001446	3.234621	0.0035
$\Delta 1$	0.004633***	0.001377	3.364701	0.0026
ECT_1	-1.331368***	0.241463	-5.513765	0.0000
Constant	0.004862	0.006261	0.776550	0.4450
R-squared	0.896986	F-statistic		8.707434
Adjusted R-squared	0.793972	Durbin-Watson stat		1.927147

Selected Model: ARDL (2, 0, 1, 1, 2, 2, 1, 2, 0, 2, 0), Dependent Variable:ΔNPL ***Denotes a 1 percent level of significance, **Denotes a 5 percent level of significance *Denotes a 10 percent level of significance
Source: Author's computations

Source: Author's Estimations

Table 4.8 reports associated diagnostic tests of the model, which are discussed in subsection 4.5. An ARDL-ECM has two important parts. First, estimated short-run coefficients and second, error correction term, (ECT_1), that provides the feedback or the speed of adjustment whereby short-run dynamics converge to the long-run equilibrium path in model.

Estimations show that the coefficients of all the regressors loan deposit ratios (LDR) are statistically significant at either at 1 percent level. while the coefficients of return on assets, non-performing loans and loan loss provisions and capital adequacy are statistically significant at the 5 percent level. The coefficient of the error correction term, (ECT_1), which measures the speed of adjustment is as expected, significantly negative at 1 percent, suggesting that the series is not explosive and that equilibrium in the long run was attained. It suggests that about 100 percent of the disequilibrium in the non-performing loan function for the current period were corrected in the following year.

4.5 Discussion of Findings

This study analyses long tern equilibrium relationship as well as short-run dynamic adjustment of such relationship on performance of commercial bank, it was realized that the Return on assets, Loan loss provisions, non-performing loan, Capital adequacy and Loan deposit were non-stationary at level. Return on assets, Loan loss provisions, non-performing loan, Capital adequacy and Loan deposit become stationary after first difference, implying that they are each integrated of order one. The bounds test of the ARDL model showed a proof that there is indeed a long run relationship between the variables in the model and therefore the long run cointegration model and coefficients can be estimated and specified.

ARDL results in show that non-performing loans is statistically significant to explain the impact in return on assets. The results for Nanteza (2015) are however attributed to the small sample size Regarding returns on assets, the study finds a statistically significant inverse relationship with NPLs, with a coefficient of -0.025. This implies that a unit increase in the NPL decreases ROA by 0.025 percent in the long run, keeping other factors constant. The result is in line with our prior expectations and economic theory since higher non-performing loans imply less profitability of the banks which makes bank managers less pressured in creating revenue from credit activities and thus, leading to less exposure to credit risk. This finding is well aligned with the findings of Kjosevski and Petkovski (2017); Goldewski (2005) and Boudrigaet al. (2009), and Louziset al. (2012) and Ćuraket al (2013). In the short run, non-performing loan also have a negative impact on ROA, significant at 5%. It can therefore be confirmed that increase in NPL is associated with a decrease in the level of ROA.

Regarding capital adequacy the study found a statistically inverse relations with return on asset in Tanzania with coefficients -0.55 which means percent increase in capital adequacy , return on asset will decrease by 0.55 which implies that when capital decline its reduces the effectiveness of commercial banks Similar results were obtained by Beck, Jakubik and Piloui (2013), Khemraj and Pasha (2009), Fofack (2005) and Akinlo and Emmanuel (2014) among others and in sharp contrast with the finding of Baboučak and Jančar (2005).

The study further finds loan loss provisions ratio has a negative impact on return on asset with coefficients -0.01 which implies a percentage increase in loan loss provisions, return on assets will decrease by 0.01 which implies that commercial bank will have minimize non-interest expenses and income. In the short run, loan loss provisions also have a negative impact on ROA, significant at 5%. It can therefore be confirmed that increase in loan loss provisions is associated with a decrease in the level of ROA. Finally increase in loan deposit ratio has negative impacts in ROA thought in the long run the variable is statistically insignificance but its play an important role in determine the impacts of return on asset in the short run with coefficients of 0.000430 which implies in the short run when loan deposit ratio increases return on assets will decrease as commercial bank especially NMB will diversify its income from other sources rather concreating large party of the income on lending.

5.0 SUMMARY, CONCLUSIONS AND RECOMMEMNDTIONS

Summary of the Study

This study examining the effect of credit risk management on the financial performance of commercial banks in Tanzania; A study at National Microfinance Bank plc (NMB) using quarterly secondary data from January 2010 to December 2020 using Johansen Maximum Likelihood Co-Integration Test and Error Correction Regression. Results models shows loan deposit ratio, loan loss provisions, non-performing loans and capital adequacy have effect in long run to the return on assets of commercial bank in Tanzania.

5.2 Conclusion

The commercial banks are guided by the objective of earning high profit. There seems to be a primary objective of the banks to increase his balance sheet size. Thus, a common observation that the total loan size of bank is rapidly increasing. Also, to commensurate the increase on assets (due to increase in loans and advances) bank is found to have increased the deposit base. The increase in loans and advances is definitely a good thing, but bank should have a very good credit control standards and risk monitoring system in place. Further, bank should be quite careful towards maintenance of good asset portfolio. Else, these loans could easily get into problem and ultimately affect the bank in the form of increased non-performing loan. Credit risk management should be at the center of banks operations in order to maintain financial stability. Credit risk management includes the system process and control which a company has in place to ensure the efficient collection of customer payment and the risk of no-payment. To achieve the goal of owners' wealth maximization, banks should manage their assets, liabilities and capital efficiently. In doing this, credit policy should set out the bank's lending philosophy, specific procedures and means of monitoring the lending activity (Shakya, 2017).

This research indicates that non-performing loans/Liability ratio is employed to estimate the effectiveness and suitability of a banks' credit risk management. Amazingly, this ratio has a shown a long run effect. This result is on contrary to what is expected of NPL ratio to have a short run effect on bank's performance. The empirical results show a long run effect of non-performing loans on banks profitability. This result reveals that, in spite of a large number of unpaid loans, NPL ratio has a long run effect on profitability. This means that, NMB banks need to establish efficient arrangements to deal with credit risk management.

The results also reveal that the Capital adequacy ratio which is expressed as capital to risk weighted assets ratio has a significant impact on profitability of scheduled commercial banks in

long run rather than in short run. The results indicate that well capitalized banks achieve higher profits due to lower cost of funding but also this indicate that the capital maintained by banks proportionally affects the level of funds available for assets creation like loans, which always influences the level and degree of risk absorption.

The results of this study are in line with the study's prior expectation, credit risk is negatively and significantly related to bank performance. This implies that bank increased exposure to credit risk reduces profits. This may result by the fact that health of a bank's loan portfolio may be reflected by changes in credit risk and affect the performance of the institution as indicated by Cooper et al. (2003). The findings of this study concur with studies by (Afriyieet 2011; Hosnaet 2009; Ogboi and Unuafe, 2013; Marshal and Onyekachi, 2014) explained that there exist a significant negative association between credit risk components and financial performance. The study by Kithinji (2010) gives evidence that profits of commercial banks are not influenced by the number of credits or loans. The results may be explained since an asset or loan become irrecoverable, in case of outright default or the risk of delay in servicing of loans and advances. Thus, when this occurs or becomes persistent, the performance, profitability, or net interest income of banks is affected. Duca and McLaughlin (1990) conclude that variations in bank profitability are The Effect of Credit Risk on Financial Performance of Commercial Banks Tanzania largely attributable to variations in credit risk, since increased exposure to credit risk is normally associated with decreased firm profitability. These triggers a discussion concerning commercial banks that are exposed to high-risk loans tend to have higher the accumulation of unpaid loans and the lower the profitability.

The researcher further concluded that the credit risk management indicators considered in this research are important variables in explaining profitability of NMB commercial bank. Based on findings from the empirical analysis, the study concludes that bank increased exposure to credit risk reduces profits. This may result by the fact that health of a bank's loan portfolio may be reflected by changes in credit risk and affect the financial performance of the commercial banks. This indicates that poor asset quality or high non-performing loans to total asset related to poor bank performance. Thus, it is possible to conclude that banks with high asset quality and low non-performing loan are more profitable than the others. The capital may also be reduced by increase of loan loss provision which affects the profitability.

5.3 Recommendations

After close examination and analysis of the research findings, the following recommendations are suggested:

i. Conduct regular physical visit to the business premises to ascertain that funds disbursed are properly utilized. Physical personal visit is the most effective to collect loan but costly, the bank should determine the visit in advance by being as knowledgeable as possible about the borrower and the business. Once customer found to use fund for unintended purposes should be sued before the court on the ground of breaching the contract.

ii. Adopting a relationship management approach. Such that establishing a good relationship with borrowers, this can be a good strategy which can be employed by NMB Bank in the effort of reducing non-performing loans. This can be done through conducting seminars or workshop. Initiation of education programs to the borrowers concerning lending will enable borrowers to have enough knowledge concerning lending

also educations to borrowers will enable them to know how the best to use borrowed funds. Also, through these educations' programs will enable borrowers to have enough knowledge on how to manage their business and as findings reveal that one of major factor that because non-performing loans is business failure due to lack of business knowledge this will help to overcome this.

iii. NMB Bank should put in place a vibrant credit process that including proper customer selection, once the loan is sanctioned the regular monitoring and follow up is essential, also bank should put clear recovery strategies for sick loans. Also, the above strategy can be used to overcome poor credit monitoring which is one of the major factors which cause non-performing loans.

iv. NMB Bank should start using credit reference bureau which is already launched here in Tanzania and that will facilitate the dissemination of credit information, such that credit reference bureau will help the bank to exclude poor payers from the process.

5.4 Areas for Further Research

The study suggests that a further study can be done on the effect of credit risk management by use of long run and short run measure on the financial performance of other financial institutions like the micro finance institutions (MFIs) and SACCOs. This is to ascertain if the model can be applied as a proxy for credit risk management on the other financial institutions in the Tanzania market. Further studies can also be undertaken on risk management practices followed by commercial banks in Tanzania whereby the study will aim to investigate on the awareness about risk management practices within the banking sector. The study can comprise of data collected through both, primary as well as secondary sources with the purpose of using primary source data being to check the extent to which different risk management practices have been followed by the commercial banks through the use of a questionnaires whereas, the objective to use secondary data will be to link the risk weighted Capital Adequacy Ratio (CAR) to the different financial indicators of the commercial banks that are used to measure the banks' financial soundness. Further studies should be conducted to find out whether the development of credit reference bureau in Tanzania will go hand in hand in reducing the credit risk posed by lending to investigate the cut in insurance costs associated with loans and cutbacks in profitability of these firms.

REFERENCES

Abiola, I. & Olausi, A. S. (2014). *The Impact of Credit Risk Management on the Commercial Banks Performance in Nigeria*. International Journal of Management and Sustainability, Vol.3, No.5, pp. 295-306.

Arif, A., & Showket, A. 2013. *Relationship between financial risk and financial performance: An Insight of Indian Insurance Industry.* International Journal of Science and Research, Vol.4, No. 11, pp.1424-1433.

Bank of Tanzania 2010. *Risk Management Guidelines for Banks and Financial Institution.* Dar es Salaam: BoT.

Banks, E. 2014. *Liquidity Risk. Managing Funding and Asset Risk.* London: Palgrave Macmillan.

BoT. 2020. Monetary Policy Statement (2020/2021*).* Dar es Salaam: Bank of Tanzania.

Danquah, M., Quartey, P., & Iddrisu, M. A. (2017). *Access to Financial Services Via Rural Community Banks and Poverty Reduction in Rural Households in Ghana*. *Journal of African Development, Vol.19*, pp.67-76.

Fali, I. M., Nyor, T., & Mustapha, L. O. 2020. *Financial Risk and Financial Performance of listed Insurance Companies in Nigeria. European Journal of Business and Management. 12, No.12, pp.* 143-153.

FDIC. 2016. *Core Profitability of Community Banks: 1985-2015.* Washington, DC: Author.

Hosna, A., Manzura, B. & Juanjuan, S. (2009). *Credit Risk Management and Profitability in Commercial Banks in Sweden*. University of Gothenburg.

Kolapo, T. F., Ayeni, R. K. & Oke, M. O. 2012. Credit Risk and Commercial Bank's Performance in Nigeria: A Panel Model Approach, *Australian Journal of Business and management Research,* Vol, 2, No. 2, pp. 31-38

Kithinji M. A 2010. *Credit Risk Management and Profitability of Commercial Banks in Kenya.* Nairobi: University of Nairobi.

Kothari C.R. 2004. *Research Methodology, Methods and Techniques*, 2nd edition. New Delhi: New Age International Ltd.

Lalon, R. M. 2015. Credit Risk Management (CRM) Practices in commercial banks of Bangladesh: A Study on Basic Bank Ltd. *International Journal of Economics, Finance and Management Sciences* 2015, Vol. 3, No.2, pp. 78-90.

Li, F. & Zou, Y. 2014. *The Impact of Credit Risk Management on Profitability of commercial banks: A study of Europe.* Umea School of Business and Economics, Umea University.

Magnifique, U. J. 2013. *The Impact of Credit Risk Management on the Financial Performance of commercial Banks in Rwanda*. Nairobi: Nairobi University.

McKensey & Company. 2020. *Global Banking Annual Review*. London: McKensey & Company

Mensah-brown, E. 2011. *Performance of Rural Community Banks in Gahama (Master Thesis).* Accra: University of Ghana.

Mody, A. 2015, August 26. *Which are Europe's troubled banks?* Retrieved October 14, 2020, from weforum.org: https://www.weforum.org/agenda/2015/08/which-are-europes-troubled-banks/

Nair, A., & Fissha, A. 2010. *Rural Banking: The Case of Rural Community Banks in Ghana.* Washington: World Bank.

Ogboi, C., & Unuafe, O. K. 2013. *Impact of Credit Risk Management and Capital Adequacy on the Financial Performance of Commercial Banks in Nigeria*. *Journal of Emerging Issues in Economics, Finance and Banking*. Vol.2, No. 3, pp.201-220.

Owusu-Antwi, G., Anwtwi, J., & Crabbe, M. (2014). *The Performance of Rural Bank's in Ghana: The Ages Have Past Anything Recommended for the Future*. *International Review of Management and Business Research, Vol. 3, No.2, pp.* 1047-105.

Magnifique, U. J. (2013). *The Impact of Credit Risk Management on the Financial Performance of commercial Banks in Rwanda*, Nairobi University.

Nyamutowa, C. & Masunda, S. (2013). *An analysis of credit risk management practices in commercial banking institutions in Zimbabwe*, International Journal on Economic Research, 4(1), 31-46.

Ogboi, C. & Unuafe, O. K. (2013). *Impact of Credit Risk Management and Capital Adequacy on the Financial Performance of Commercial Banks in Nigeria*,

Journal of Emerging Issues in Economics, Finance and Banking (JEIEFB). *An Online International Monthly* Journal 2(3), 201-220.

Onuko, L. K., Muganda, M. & Musiega, D. (2015). *Effect of Credit Risk Management on Loan Portfolio Quality of tier one Commercial Banks in Kenya*, International Journal of Business and Management Invention, 4(7),