



Nexus between Non-Performance Loans and Financial Performance of Commercial Banks Listed at Dse, Tanzania: Ardl Approach

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Abstract: Management of credit risk is serious to the financial viability of commercial banks in both developing and developed countries. Non-performing loans (NPLS) are proxies for credit risk. The study investigated the association between NPLs and the financial performance of Tanzanian commercial banks. The study used a causal research design, with study participants NMB, CRDB MKOMBOZI, MAENDELEO, and DCB recruited by a purposeful selection approach. The research was based on secondary data received from the DSE between 2013 and 2020. Making use of a template collection. Descriptive statistics, a correlation matrix for a link, bound cointegration for a long-run relationship, the granger causal test for a causal association, and an error correction model were employed in the study. According to the study's findings, there is a significant negative relationship between financial performance and NPLs. It. The investigation found that there is a long-run relationship between the factors under consideration and financial performance. Furthermore, a one-way association was established between NPLs and the financial performance of CRDB NMB, MAENDELEO, DCB and MKOMBOZI, the survey found that commercial banks listed on the DSE had a low rate of NPLs. While the issue was interesting, close is an essential to do a complete examination of all Tanzanian banks.

Keywords: Financial Performance, NPL, DSE, Tanzania, Commercial Bank.

1. INTRODUCTION

Management of credit risk is vital for every financial institution trying to increase revenue (DGL, 2015). It is one of the variables that contribute to poor financial performance and, eventually, insolvency (Olokoyo et al., 2012). Some commercial banks operate at a loss due to credit risk management. In empirical research, the terms risk and indistinctness are used interchangeably to refer to the arbitrariness of earnings associated with an investment asset.



According to Nyansio (2020), risk to a financial foundation is the assessed uncertainty connected with various stages. The chance of a borrower defaulting and failing to pay the overdue service amount is referred to as loan risk (Nshala, 2017). Previous studies in Mexico, Brazil, Argentina, Canada, Uruguay, and Chile found that NPLs have an impact on financial performance and contribute to poor financial performance (Shahid et al., 2019; Olokoyo et al., 2021). Nyansio (2020) undertook a research in Nigeria to assess commercial banks' credit risk management and financial performance. Loan loss provision, liquidity, capital adequacy, and NPLs have all been linked to commercial bank financial performance in EAC COUNTRIES. These characteristics were shown to be major drivers of commercial bank financial success in various countries. Enoch et al. (2021) used a panel data research design to examine the impact of credit risk management on financial performance in East African commercial banks (Burundi, Rwanda, Kenya, Tanzania, and Uganda), discovering that NPLs and loan loss provision have a significant impact on commercial bank financial performance. Financial organizations have combated risk management by establishing a risk and compliance department, which is in charge of monitoring and managing associated risk to an acceptable level. Financial institutions have faced complexity aimed at a diversity of reasons over the years, with the primary cause of serious banking challenges remaining a careless credit attitude for counterparties and borrowers as a result of disappointment to authorize loan performance principles, express decent loan policies, insufficient lending supplies, or a lack of deliberation to fluctuations in financial, deprived portfolio risk organization, or other circumstances that can lead to a feeble faith. Large commercial banks' revenues in Tanzania have fallen dramatically in recent years. According to the 2020 BOT report, NMB's earnings declined by \$60 billion between 2016 and 2020, while CRDB's profit fell by \$33 billion. Meanwhile, NBC made more than \$10 billion in profit in 2018. This is a significant economic shock for the country. Similarly, due to capital adequacy levels of less than 15%, the BOT declared Mbinga Community Bank PLC, Njombe Community Bank, Tanzania Women Bank, Twiga Bancorp, and M bank insolvent (BOT, 2020). However, nothing is known about the underlying causes of such financial stress because no thorough study has been conducted that has adequately addressed the problem. However, none of these studies were undertaken in Tanzania, and they did not include the NPLs, loan loss provisions, and capital adequacy that the current study's researcher is interested in. Because commercial banks are so important, ignoring this issue might have devastating consequences for the country's economy. Nothing will be obtained from Tanzania's latent economic potentials related to strong commercial banks unless and until this difficulty is clearly recognized.

Literature Review

Melton proposed credit risk theory in 1974, arguing that corporate financial assets lose value due to external factors from the investment period until maturity. The application of this theory is proven by identifying the primary source of credit risks in financial assets. Asset depreciation is influenced by variables such as wear and tear, the time worth of money, technological dynamism, and inflationary implications. To help with the research, the CAMEL model is being employed. Sabez et al. (2015) evaluated Ghanaian bank performance using the CAMELS grading system. Earnings for Ghanaian banks were found to be small, while NPLs were determined to be critical for Ghanaian bank success. Onkoba (2014) explored the dynamics of



banking soundness in the Indian banking industry using CAMELS rating systems. According to the conclusions of a research that utilized the CAMELS grading system to examine the performance of the Indian banking sector, the most crucial elements in evaluating the soundness of Indian banks are capital sufficiency, management, and asset quality. NPLs and financial banks have a beneficial association, according to study in Nigerian banks (Lalon, 2015). Furthermore, NPLs and financial performance in Ghanaian banks have a favorable association (Paulino & Mwambia, 2018). Annor and Obeng (2017) discovered a link between non-performing loans and financial performance in Ethiopian commercial banks. According to research conducted at South African banks, NPLs and financial institutions have a positive link (Onkoba, 2014). Non-performing loans and financial banks have a favorable connection with Malawi banks, according to research (Mueni, 2019; Mustafa, 2019). A prior study in Zimbabwe discovered a negative relationship between poor performance and poverty.

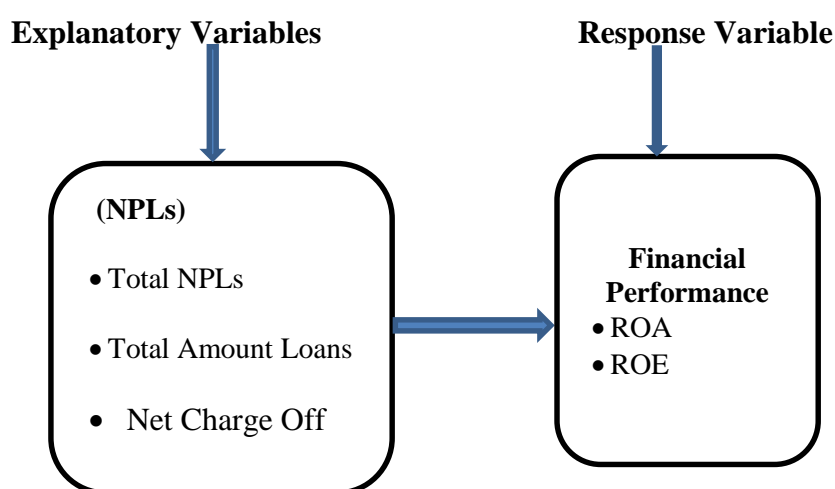
Nonperforming loans (NPLs) and financial performance have a favorable association, according to Paulino and Mwambia (2018). According to the research, insufficient central bank supervision leads to a rise in NPLs, resulting in poor financial performance for commercial banks. Excellent BASEL I and II practice, according to the research, is crucial for enhancing commercial banks' financial performance. Weak loan excellence, high attentiveness of credit in specific segments such as estimated loaning, and uncared-for loan values, according to Gizawet al., (2015), have significantly contributed to NPLs' routine exertion in gathering advances, cassette high costs of credit facility, and thus significantly influencing their profitability performance (Kinyau, 2017).

Prior research on the success enactment of the EAC investment region later 1994 credit risk administration reveals a good impact on together proceedings of bank effectiveness performance, which is consistent with preceding hypothetical expectations. Asset quality has a strong association with ROE but its relationship with ROA is significant, helpful, and expectable (Bastomi et al., 2017). Kajirwa (2019) proved that Ghanaian bank effectiveness performance was inferred by risk management, whereas other loan risk aspects were found to be associated to Ghanaian bank profitability performance. Thomas and Alabi (2014) evaluated the influence of lending policy on the performance of Nigerian commercial banks. This research linked asset quality and profitability to prudent loan appraisal and disbursement, dynamic credit monitoring, and decisive interventions. Enoch et al. (2021) extended Thomas and Alabi's (2014) study by investigating the influence of client assessment on the efficiency of Nigerian microfinance institutions. Despite the fact that this study discovered relevant qualities, it is still primarily dependent on the Nigerian microfinance bank. Improper credit risk management has reportedly had a large economic impact on East African commercial banks, with the mainstream of loan facilities issued to debtors proving problematic to repay (Muriki, 2017; Muturi and Rotich 2016; Nelson 2012). This research shows that the presence of NPLs at various institutions is linked to ineffective credit risk management practices. The evaluations, however, did not account for loan loss provisions or capital adequacy. Kipkirui and Omagwa (2018) investigated a similar issue in Nairobi, Kenya, using microfinance institutions. And said something comparable. Similarly, Githama and Gachanja (2020)

supported this viewpoint by looking at the impact of credit evaluation approaches on NPLs in community sector monetary organizations.

Conceptual Framework

A conceptual framework (Kumar, 2019) explains how dependent variables are linked. This study included 2 categories of variables: explanatory variables and responses variables. The explanatory variable in this study was NPLs (total outstanding loans and loan amount), whereas the response variable was financial performance in terms of ROE and ROA (see Figure 1 below):



Source: Adopted and modified from Nyansio (2020)

2. RESEARCH METHODOLOGY

This study was done in Tanzania, and five (5) commercial banks listed on the DSE were analyzed. The five Tanzanian commercial banks were chosen using the most recent commercial bank data. A panel data study approach (cross sectional) was used to analyze the financial statements of five (5) DSE-listed commercial banks. In addition, sample approaches were developed. Using deliberate selection approaches, five (5) commercial banks were picked from a list of 29 commercial enterprises listed on Tanzania's DSE, the financial statements of which were critical for the study. Commercial banks in Tanzania were picked based on their existing experience and track record. The research spans fiscal years 2013 through 2020. This study relies on secondary data, including yearly time series data from 2013 to 2020. The timeline of 7 to 20 years was chosen since it corresponds to the range specified by commercial banks beginning in 2013. CRDB, NMB, MKOMBOZI, DCB MAENDELEO, were among the commercial banks chosen. NPL the Bank of Tanzania (BOT) were also considered, as were market financial performance indicators. Because the study used panel data, large data sets may be investigated, independently reviewed (making them more open to public scrutiny), and contrasted, allowing for reproducibility. Finally, secondary data is often credible since it is generated and provided by specialists in their respective domains.

3. RESULTS AND DISCUSSIONS

Descriptive Statistics

According to Table 2, NPL had the lowest mean (0.03222) when compared to all other categories. Meanwhile, for the same NPLs, the standard deviations were 0.01921, 0.0140.093, and 0.03, 0.093, respectively. This demonstrates that nonperforming loans have a detrimental impact on the credit risk management performance of commercial banks. The mean, standard deviation, lowest, and highest capital adequacy, on the other hand, were 0.6466, 0.1046, 0.422, and 0.851, respectively. The mean, standard deviation, lowest, and maximum loan loss provision amounts were also 0.6512, 0.1106, 0.413, and 0.841, respectively. Furthermore, the mean, standard deviation, lowest, and greatest ROA values were, in that order, 0.6846, 0.0946, 0.423, and 0.841. Finally, the mean, standard deviation, lowest, and highest ROE values were, in that order, 0.6676, 0.0846, 0.423, and 0.781. The significance

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
NPL	150	2.0222	2.0008	2.090	2.044
ROA	150	2.345	2.0667	2.408	2.333
ROE	150	2.7899	2.897	2.999	2.785

Source: Research Findings, 2023

Lag Test

Table 3 shows that lag one has the lowest AIC, HQIC, and SBIC compared to all values at different lags, and lag one has the lowest HQIC and SBIC despite the fact that the AIC at that lag does not have the lowest value.

Table 3: Lag Test

Variables	Lag	FPE	AIC	HQIC	SBIC
Financial Performance ROA	0	0.90000	-7.0999	-1.54519	-1.61824
	1	.002723*	-3.06845*	-3.23751*	-3.9836*
	2	0.002863	-3.91832	-2.77252	-2.89165
ROA	0	0.000381	-5.0458	-5.12053	-4.99357
	1	0.000143	-6.21278	-5.98325*	-4.92834*
	2	.000143*	-6.1517*	-5.96237	-5.8885
NPL	0	0.000381	-5.0558	-4.02153	-4.99357



	1	0.000143	-6.03278	-5.98325*	-5.92834*
	2	.000143*	-6.02517*	-5.96937	-5.8885

Source: STATA (OUTPUT) 2023

The ADF (Augmented Dickey-Fuller) Stationarity Test. The following hypotheses were proposed for this test.

H0 denotes a non-stationary time series with a unit root.

H1 denotes a stationary time series with no unit root.

To establish whether or not the data are stationary, it is usually advised to analyze the panel characteristics of the data formerly approximating the ADLM, Level model, and ECM (Creswell, 2014). As a result, the Phillips - Perron (P-P) and Augmented Dickey-Fuller (ADF) tests were used to find the unit root. The results of the ADF and PP tests for Revenue and Budget are shown in Table 3. All variables were non-stationary in the level form at 5% significance levels. However, after the first discrepancies, all variables developed constant at 5% significance levels. As a result, these variables have been included in order 1(1).

Table 2: Stationarity testing Both the Phillips Perron and the Augmented Dickey-Fuller tests were employed.

ADF Test					
Variable s	Level		First difference		order of integration
	Test statistics	Critical value	Test statistics	Critical value	
ROA	-1.398	-2.952	-4.875	-2.955**	I(1)
ROA	-1.398	-2.952	-4.875	-2.955**	I(1)
NPL	-1.741	-2.952	-5.069	-2.952**	I(1)
The PP Test					
Variable s	Level		First difference		order of integration
	Test statistics	Critical value	Test statistics	Critical value	
ROA	-1.582	-2.930	-6.978	-2.952**	I(1)
ROE	-1.572	-2.950	-6.978	-2.852**	I(1)
NPL	-2.290	-2.250	-7.602	-2.852**	I(1)

Source: Research Findings, 2022

The maximum number of delays for the overall variable must be established before deciding whether they have a long-term link (co-integrated) or not (Hill et al., 2011). According to Table 4, lag one generated the largest delay for all variables since it had the lowest AIC, HQIC, and SBIC values when compared to the other lags.



Table 3: Lag Test for Overall Variables (ROA, NPL, ROE,)

Lag	FPE	AIC	HQIC	SBIC
0	2.60E-01	-6.8698	-7.8393	-3.7854
1	3.34E-01*	-6.04176*	-7.95016*	-3.78843*
2	3.25E-03	-6.9866	-7.834	-1.5644
3	4.30E-07	-6.8698	-7.6561	-1.2787
4	8.21E-01	-6.8103	-7.5356	-1.0503

Source: STATA, 2023

The cointegration test is always used to determine if the variables are related in the long run. The cointegration test is always done after defining the proper degree of delay for all overall variables and ensuring stationarity. The cointegration test is used to choose amongst error correction models (ECM), long run equation with least squares, and autoregressive distributed lag as the best model to apply. Johansen's test for Co - integration was used in this goal because the variable was integrated at order one, implying that the order of integration was homogenous for all variables I (1). since a consequence, the variables were not co-integrated, since the test statistics for the trace and max statistics were smaller than their critical values, meaning that the null hypothesis of no cointegration was accepted. There is no long-term link between the explanatory variables of choice (NPL) and commercial bank financial performance since the p values are larger than 0.05. Commercial banks' financial performance, on the other hand, has a positive association with the preceding day's financial performance.

Table 4: Johansen's cointegration test (long run association)

Null Hypothesis	Trace Statistics	Critical Value	Max Statistics	Critical Value
$r = 0$	25.0988*	95.41	7.0909	13.07
$r \leq 1$	6.897	2.76	3.0977	1.760

H₀= There was no cointegration test.

Source: STATA, 2023

Table 5: Financial results ARDL (ADLM Model) Short Run Estimates

Financial Performance	Coef.	Std. Err.	T	P>t
ROA				
L1.	0.893883	0.72839	20.14	0.003***
ROE				



L1.	0.27393	0.84948	41.24	0.0001***
NPL	0.83925	0.72839	0.340	0.930
Cons	0.01111	0.077777	7.223	0.928

$R^2 = 0.8947$, F- value = 77.00, $P < 10\%$, ** Significant at $P < 5\%$ and *** = Significant at $P < 1\%$

Source: STATA OUTPUT, 2023

The autocorrelation test result is shown in Table 7; because the null hypothesis says that there is no autocorrelation, the data is free of autocorrelation. Because the p-value for the Breusch-Godfrey LM test for autocorrelation was greater than 0.05, the null hypothesis was not rejected. Because it is near to 2, the Durbin-Watson d-statistic (9, 97) = 2.89099 implies the same thing.

Fixed Effect Model Regression Analysis

According to the portfolio theory of NPLs, money will most likely come from internal rather than external sources if a company is to be low in order to attain profitability. Commercial banks consequently deal with a high level of NPLs, which has a negative impact on their financial performance. The assertions made by several experts that NPLs lead to poor financial performance (Mueni, 2019; Mustafa, 2019) validate the findings. Furthermore, poor loan assessment, inadequate collateral, and the credit policies of commercial banks contributed to the high number of non-performing loans, which ultimately led to the failure of those institutions. Other studies that contradict this one indicate that the key causes of NPLs are bad loan products and borrower characteristics. NPLs bankrupt the bank, and if the bank is not operating correctly, the national economy suffers.

4. CONCLUSIONS AND RECOMMENDATIONS

Profitability was 0.01 (P 0.01) and had a negative association with financial performance, with a regression value of -0.049, according to Table 12. This meant that with every 1% rise in NPLs, ROA and ROE decreased by 0.049%. The presence of lag NPLs was statistically significant (P 0.05), suggesting a positive link between ROA and ROE with a regression value of 0.010. This means that for every unit increase in lag-NPLs, ROA and ROE increased by 0.010%. This conclusion is consistent with the findings of Chang et al. (2022), who linked losses in Chinese financial institution profits to capitalization, bank size, weak governance, and nonperforming loans. As a result of the unfavorable relationship between NPLs and financial performance, commercial banks prefer to finance long-term projects with clean loans. According to the findings of the study, total loans should be substantial and clean, and they want to use their retained earnings to acquire new assets. According to the portfolio theory of NPLs, if a corporation is to be profitable, money will most likely come from internal rather than external sources. As a result, commercial banks face a large share of nonperforming loans, resulting in poor financial performance. According to several experts, nonperforming loans (NPLs) cause poor financial performance (Mueni, 2019; Mustafa, 2019), which supports the



findings. Furthermore, due to inadequate loan appraisal, insufficient collateral, and commercial bank credit policy, a substantial number of non-performing loans have resulted in commercial bank collapse. Furthermore, recent research has shown that the key causes of NPLs are weak loan products and adverse borrower character. Nonperforming loan exposure at the bank Government and Authority Recommendation Responsible. By giving quality directives to commercial banks, the Bank of Tanzania (BOT) should regulate the activities of microfinance commercial banks in order to raise capital adequacy, minimize NPLs, and provide adequate loan loss reserves. BOT oversight reveals that NPLs, capital adequacy, and LLP are not adequately monitored, implying that BOT should increase supervision of Tanzanian commercial banks.

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