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(RESEARCH ARTICLE)

The impact of credit risk management on financial performance of commercial banks: A case study of AB bank Zambia

Cynthia Nambeye * and Brian Manchishi

Graduate School of Business, University of Zambia, Lusaka, Zambia.

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Abstract

This study investigated the effects of credit risk management on the financial performance of AB Bank Zambia for a period 2013-2023. Primary data was collected through questionnaires and Secondary data through the analysis of AB Bank's annual financial reports. The data was analyzed using correlation, and tables, bar charts which were generated in the Statistical Package for Scientists (SPSS) version 26 The findings revealed that there was a strong negative relationship between non-performing loans (NPL) ratio and profitability. Higher levels of NPL reduces profits of banks. The results showed a positive relationship between capital adequacy ratio (CAR) and return on assets, indicating that a higher CAR enhances financial performance by providing a buffer against potential losses. Furthermore, the positive correlation was observed between loan deposit ratio and return indicating that an optimal loan to deposit balances liquidity and profitability. A strong capital base allows banks to absorb potential losses, and its ability to generate profits. Poor credit risk management for the bank can lead to significant losses while effective management can enhance profitability and optimize asset utilization Recommendations include enhancing credit risk management practices, maintaining a robust capital base, tailored financial literacy initiatives, and continuously monitoring of the liquidity levels. These recommendations aim to improve the credit risk management of AB Bank Zambia.

Keywords: Credit Risk Management; Financial Performance; Non-Performing Loans; Capital Adequacy Ratio; Loan to Deposit Ratio

1. Introduction

The subject of credit risk management is important in understanding some of the banking sector susceptibility and financial stability**.** The efficiency of an economy and the viability of the banking industry are directly influenced by the presence of commercial banks. As a result of this, any volatility in the financial sector can lead to issues throughout the entire economic system. A bank's agenda has traditionally included risk management as one of its highest priorities. In order to provide customers with a variety of different financial solutions, banking companies take on a variety of different financial risks. As a consequence of this, they fulfil an essential function as agents, contributing market knowledge, finance capacity, and operational effectiveness to their financial activities (Amza, 2017).It is important for banks to manage the risk it is exposed to so as to gain public confidence. Risk management is the process of identifying, assessing and addressing any financial, legal, strategic and security risks to an organization. It helps management on how to align the risk-return trade-off with the bank's best long-term and short-term profitability (Tušer & Oulehlová, 2021).

Credit risk management in banks has become more important not only because of the financial crisis that the industry experienced between 2008-2009, but also an important concept that determine banks' survival, growth and

* Corresponding author: Cynthia Nambeye

profitability. credit risk management is significant as it promotes liquidity, financial stability and profitability. For bank to continue its operation it has to put in implement good credit risk management (Mulwanda, 2022)

A study by (Mwangi, 2021) indicates that credit risk management is important in bank as it reduces the degree of fluctuation in earnings and lessen potential losses that may arise to due to loan defaults. The statistics from bank of Zambia on the industry interest income from loans and advances indicated 37.9% in 2019,38% in 2018 and 35.5% in 2017.The income from commission, fees and service charges were 15.4% in 2019,18.9% in 2018 and 19.8% in 2017.The industry profitability benchmark for return on asset was 4% for 2017,2018 and 2019.The records indicated that the average rate of return on assets was 3.1% in 2017,2.8% in 2018 and 3.3% in 2019.The mentioned results shows that the banking industry profitability is below the bench. The performance of some banks in the industry are a concern to the Bank of Zambia because of the prevailing high non-performing loans which negatively impacted the commercial bank's profitability (Bank of Zambia, 2020).

1.1. Statement of the problem.

According to the Bank of Zambia's report the level of non-performing Loans (NPLs) in the Zambian banking industry is high (Bank of Zambia, 2019). The bench mark for NPL set by Bank of Zambia is 10% but the industry recorded 12% in 2022. Non-performing loans are a problem to the commercial banks to the extent that they negatively impact the profitability of the banks. Non-performing loans also poses cash flow problems for the bank as it will no longer earn income from its credit business. The increasing NPLs and NPL ratio if left unaddressed can lead into financial crisis and constrain banks' balance sheet, with potential adverse effect on intermediation capacity. The degradation in the quality of the loan portfolio of banks was one of the major causes of problems in the banking system and financial crises in developed economies. There was a link in the rise of loan defaults and the financial shock that led to the financial instability of the globe (Kapinos et al, 2015). It was revealed by bankers' association of Zambia that some commercial banks in Zambia had reduced the number of loans it gives to its customer due to high loan defaults; the banks were directing their efforts in recovery of these loans (Daily mail 2017)Despite the importance of NPLs to the performance and stability of the banking and financial services sector in a country and globally, few empirical studies have attempted to explore it and its effect on financial performance of banks.

1.2. Research Questions

Based on the aim of the study, the following are the research questions:

- What is the relationship between non-performing loans and profitability?
- How does Capital Adequacy ratio affect Return of assets of the bank?
- How does the Loan to deposit ratio Affect Return of Equity of AB Bank?

2. Literature review and hypotheses development

From the past studies, a lot of scholars have looked at the subject of credit risk management and financial performance.

2.1. Literature on credit risk management

credit risk management is the process of identifying, analyzing, and evaluating potential risks with the intention of reducing or minimising the negative effects that these risks may have. It is also a structured approach to managing uncertainties through risk assessment, management and mitigation of risk using managerial resources. A successful way to manage credit risk is to identify the risk, evaluate, quantify and finally formulate a risk management strategy Van Gestel and Baesens (2009). Banks are exposed to different types of risks, which affect the performance and activity of these banks. The six categories of risk that will be analysed in this section are; credit risk, liquidity risk, market risk, operational risk, reputation risk and legal risk.

Credit risk occurs when a borrower or counterparty does not meet their financial obligations within the agreed upon timeframe. This risk is relevant for AB Bank Zambia because it has a direct impact on the bank's capacity to maintain its financial stability and perform economically. Other important risks, such as market risk, which is caused by unfavourable shifts in interest rates, foreign exchange rates, and commodity prices, and liquidity risk, which is caused by the inability to satisfy obligations owing to insufficient funds, also play important roles in the risk management techniques that the bank employs. Risk management is the discipline that demonstrates to bank management the risks and returns of every strategic decision at both the institutional and transaction levels, and it informs bank management on how to change strategy to align the risk-return trade-off with the bank's best long-term and short-term profitability (Tuer & Oulehlová, 2021).

In order to mitigate these risks, AB Bank Zambia, along with other financial institutions, adheres to the Credit Risk Management Practices that are specified in Basel II. These practices were developed with the intention of improving the quality of credit risk management without sacrificing the bank's ability to compete on a global scale. During the financial crisis that occurred in 2007, which resulted in the failure of a large number of banks and required the government to provide bailouts for others, the significance of effective credit risk management was brought to light. This crisis triggered a renewed focus on bank prudential supervision, which ultimately resulted in the formation of the Basel III Accord. This accord imposed stricter capital requirements and other regulatory measures to increase the resilience of banks. Feess and Hege (2012)

The credit risk management indicators in the study are non-performing loan, capital adequacy ratio and loan to deposit ratio. These indicators were picked because of the previous studies that were done.

According to Ara, Bakaeva & Sun's research (2009, p.13), Basel Accord connects the minimum regulatory capital to the underlying risk exposure of banks, the greater risk bank exposed relates to the higher amount of capital bank needs. This regulation indicates the importance of capital management in risk management and the compliance with the regulatory requirement can be expressed as risk management indicators.

According to Bilgrami-Jaffery (2015) non-Performing Loans (NPLs) have gained the attention of economists and researchers over the last three to four decades; the period when the banking sector has experienced the increasing trend in the NPL's and also started facing major crises in different countries as well as the international financial system. NPLs are a problem to the commercial banks to the extent that bad loans are negatively impacting the profitability of the banks

2.2. Literature on financial performance

There is an important number of studies that tackles the link between NPLs and banks' performance. One of the most important indicators of a bank's capacity to take on risk and raise capital is the level of profitability it generates. According to Zogning and Lenga (2022), it is a reflection of both the competitiveness of the bank and the quality of its management and leadership. A bank's income statement will provide a breakdown of its earnings, such as interest income, trading income, and commissions and fee income. The ability of a bank to generate profits is directly proportional to its willingness to either take risks or raise capital. It provides evidence of the competitiveness of banks and evaluates the quality of managerial work (Yeasin, 2022). Return on Equity (ROE) and Return on Assets (ROA) are two essential metrics that will be the focus of this section's complete analysis of profitability. This part will analyse profitability in a comprehensive manner. One of the most important indicators of a bank's capacity to take on risk and raise capital is the level of profit it generates. Profitability is a reflection of competitiveness of the bank and the quality of its management and leadership (Zogning & Lenga, 2022). Profitability is an efficiency measure and can be used by key stakeholder to assess the growth of the business and its continuity. The relationship between profitability and credit risk management at AB Bank Zambia is the key topic of this study. This study is driven by the possibility for financial benefit, which acts as the primary motivation. It is vital to have a solid understanding of the profitability of AB Bank Zambia. The factors of profitability can be grouped into two categories.

2.2.1. Return on assets (ROA)

The return on assets (ROA) is a measurement that determines the percentage of a bank's net earnings that is relative to its total assets. It offers a glimpse into the utilisation of the bank's assets. When compared to its rivals, a bank is deemed to have a higher asset-intensive profile if it generates a lower profit for each dollar of assets it holds.

2.2.2. Return on equity

This is a measurement that determines the proportion of a bank's net income that is proportional to the equity that is owned by its shareholders' equity. The rate of return on the equity capital that was invested in AB Bank Zambia is represented ROE. Banks that have a high return on equity often have superior internal capacity to create cash, which reduces their dependency on external debt financing. This can be a crucial element in the long-term financial health and growth of the bank. The analysis of return on equity and return on assets (ROE and ROA)

2.3. Empirical studies from Africa

In this section, we will review a number of studies that have been conducted on risk management and bank profitability.

Mpofu(2019) conducted a study in the sub Saharan region on non-performing loans. The analysis showed that NPLs reduces when real GDP growth rate, return on equity, return on assets, and total liabilities to total assets ratio increase and rises when unemployment rate, public debt, inflation rate, broad money, lending interest rate and domestic credit to private sector by banks increase. The study emphasized on the need of formulation and implementing that enhance management of credit risk and reduce non-performing loans. This study had limitation as it did not single out a country, the results might be different if the research was carried on a single as variables are different for each country.

In Zambia a study was conducted on the determinants of non-performing loans in Zambia with a focus on bank-specific and macroeconomic variables. The results showed that banks which are exposed to heightened credit default risk when the local currency depreciates are more inclined to lend in foreign currency (Funyina & Muhanga, 2021). The study further indicated that banks placed great emphasis on the implementation of effective risk management policies such as detailed loan screening and assessment of the macroeconomic conditions to mitigate the financial instabilities that resulted from changes in macroeconomic conditions and enhance asset quality

(Mulwanda, 2022)looked at the link between profitability and credit risk management of ABSA bank in Zambia. The focus of the study was on credit management practices of the bank. The results revealed that negative relationship between the level of non-performing loans and credit risk management practices at the banks.

(Mumba, 2019) the findings revealed that that macro level factors had greater effect on loan defaults in Zambia's banking sector than bank specific factors. The study focus was on both the macro level factor and internal bank factors.it was noted that bank factors that led to high non-performing loans non-supervision of customers on their loan utilization, Poor Loan Appraisal, Lack of training for the clients before/after disbursement, non-reminders of some customers concerning repayment obligation, No penalties for defaulters, Late disbursement of loans by the bank. The limitation of the study was that it only annual reports, discussion with might management increased the depth of knowledge

Research. Conducted by Gizaw(2015) to empirically evaluate the impact of credit risk on the profitability of commercial banks in Ethiopia Secondary data were gathered over a span of 12 years (2003–2004) from the annual reports of the relevant institutions and the National Bank of Ethiopia. The data was collected from eight representative commercial banks. Based on the results of the descriptive statistics and panel data regression model applied to the data, it was found that the profitability of commercial banks in Ethiopia is greatly affected by credit risk measures such as non-performing loans, loan loss provisions, and capital adequacy. These findings were discovered through data analysis.

A study conducted by Serwadda (2018) which focused on credit risk management on the Ugandan banks. The study reviewed annual reports. The results portrayed that the bank's performance was negatively influenced by non-performing loans and exposed them to large magnitudes of illiquidity and financial crisis. Capital adequacy ratio was limited to the country minimum capital requirement. The study provided good insight but fundamentals are different for Zambia set-up

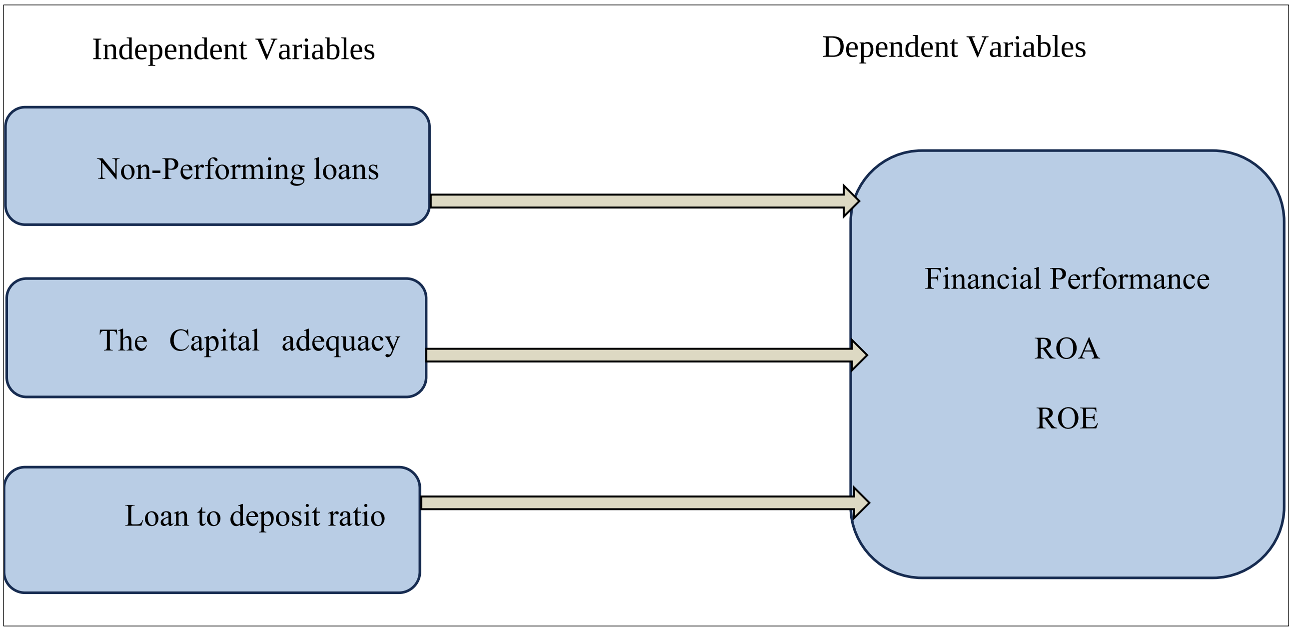
2.4. Empirical studies from outside Africa

The study conducted by (Zaidanin & Zaidanin, 2021) , on the effect credit risk management of the financial performance of sixteen commercial banks in the United Arab Emirates. The study used aggregate data from 2013-2019.The results indicated that that non-performing loans ratio and cost-income ratio have a significant negative impact on commercial banks profitability while capital adequacy ratio, liquidity ratio, and loans -to-deposits ratio all have a very weak positive relationship on the return on assets.

Zou(2014) explored the link between credit risk management and the financial performance of commercial banks in Europe. The study sought to examine the consistency of the association over time. Proxy measures for profitability in the research model are commonly known as return on equity (ROE) and return on assets (ROA), while proxy measures for credit risk management are referred to as NPLR and CAR. The data for the study were obtained from the 47 largest commercial banks in Europe between the years 2007 and 2012. Further statistical analyses were conducted to determine if the association remained consistent over time. The results revealed that the management of credit risk has a positive impact on the profitability of commercial banks. The NPLR had a significant impact on both ROE and hypothesis testing and traditional descriptive statistics.

Unlike the majority of the research which claims that there is a positive relationship between capital adequacy ration and return on assets, some scholars don't have a conclusive response as to how macro-economic factors such as inflation, interest rates affect the non-performing loans of banks.

2.4.1. Variables and Hypotheses



The Independent variables represent the credit risk management indicators which are capital adequacy ratio, non-performing loans, loan to deposit ratio

Dependent variables represent the profitability measured by return on assets and return on equity

The following hypotheses were tested.

- H_0 Non-performing loans has no significant effect on profitability of AB Bank.
- H_1 Non-performing loans has significant effect on profitability of AB Bank.
- H_0 capital adequacy ratio has no significant effect on return on Assets.
- H_1 capital adequacy ratio has significant effect on return on Assets : :
- H_0 Loan to deposit ratio has no significant on return of equity.
- H_1 Loan to deposit ratio has no significant on return of equity

3. Research Methodology

3.1. Philosophy, approach, design, sample size and data sources

This study is grounded on the positivism philosophy, which emphasizes objectivity, empiricism, determinism, and a nomothetic approach. The researcher used quantitative research method in this study. The study relied on empirical data collected through financial reports and statistical analysis to test hypotheses and draw conclusions, assuming a deterministic relationship between credit risk management and bank profitability. The survey research design was employed to assist in discovering the inter-relationship between variables. A descriptive correlational design was used to understand the relationships between the independent variables (credit risk management practices) and the dependent variable (bank profitability) (Creswell & Creswell, 2018). The target population was 125 employees of AB Bank head office.

3.2. Data Analysis

The data was analyzed using correlation, and tables, bar charts which were generated in the Statistical Package for Scientists (SPSS) version 26. The quantitative primary data were analysed using SPSS package to generate descriptive and inferential statistics. The strength and connection between the independent factors and financial performance were evaluated using Pearson's correlation method. Regression of analysis was also used to evaluate the model's fitness (R-square).

3.3. Sampling Technique

The sampling technique used in this study is simple random sampling.

3.4. Sample size

The researcher had a target population of population 125 which was used to determine the sample size.

Yamane Simple size formula

n= N/ (1+N (e)2)

3.5. Data Collection

The researcher collected material data from secondary sources. Thus, the study relied on secondary data collected from annual reports AB Bank and Bank of Zambia websites from 2013 to 2023. Secondary data was also gathered from published papers, dissertations, and financial reports. A survey was conducted among the selected sample using questionnaires.

4. Results and Discussion

4.1. Trend Analysis for Profitability

Return on Equity (ROE) measures the profitability of a bank in relation to its equity. It indicates how efficiently a bank is using its equity to generate profits.

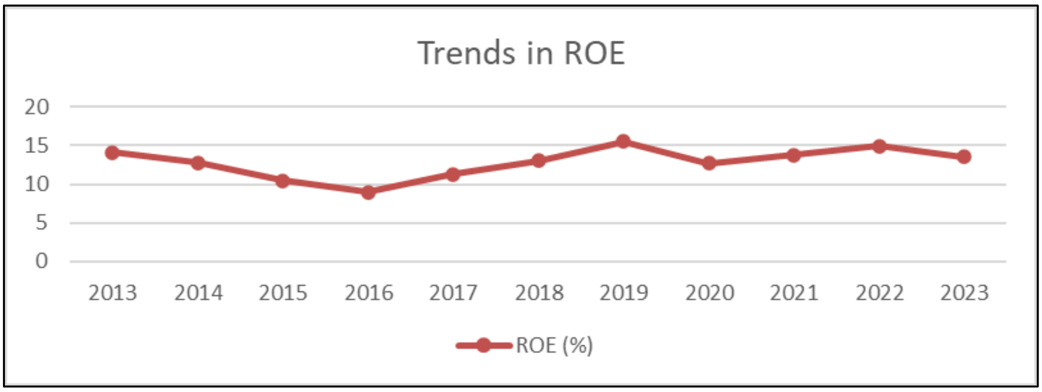


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Figure 1 Trends in return of equity of AB Bank

The figure above shows the annual return on equity (ROE) for AB Bank Zambia from 2013 to 2023. The ROE indicates the bank's profitability in relation to shareholders' equity. The trend shows variability over the years, with significant dips in 2015 and 2016 due to higher non-performing loans but recovered in subsequent years.

4.2. Net profit margin (NPM)

Net profit margin (NPM) indicates the percentage of revenue that remains as profit after all expenses have been deducted. It is a key measure of a bank's profitability. The NPM represents the percentage of revenue remaining after all expenses have been deducted. The trend follows a similar pattern to ROE, with declines in 2015 and 2016, followed by a recovery. The margin has generally improved post-2016, indicating better cost management and revenue generation.

4.3. Relationship between non-performing loans and Profitability

On the first objective, the study established that non-performing loans negatively affect profitability figure above shows the year-by-year percentages of non-performing loans (NPL), return on equity (ROE), and net profit margin (NPM) at AB Bank from 2013 to 2023. The NPL ratio indicates the proportion of loans that are in default or close to being in default. ROE reflects the bank's profitability in relation to shareholders' equity, while NPM represents the percentage of revenue remaining after all expenses have been deducted. Comparatively, recent literature by Kedia and Mishra

(2024) highlights the importance of effective credit risk management practices in enhancing financial performance. Their study emphasizes that higher NPL ratios lead to increased provisioning costs and reduced interest income, which adversely affect profitability. This supports our findings that effective management of NPLs is crucial for maintaining profitability

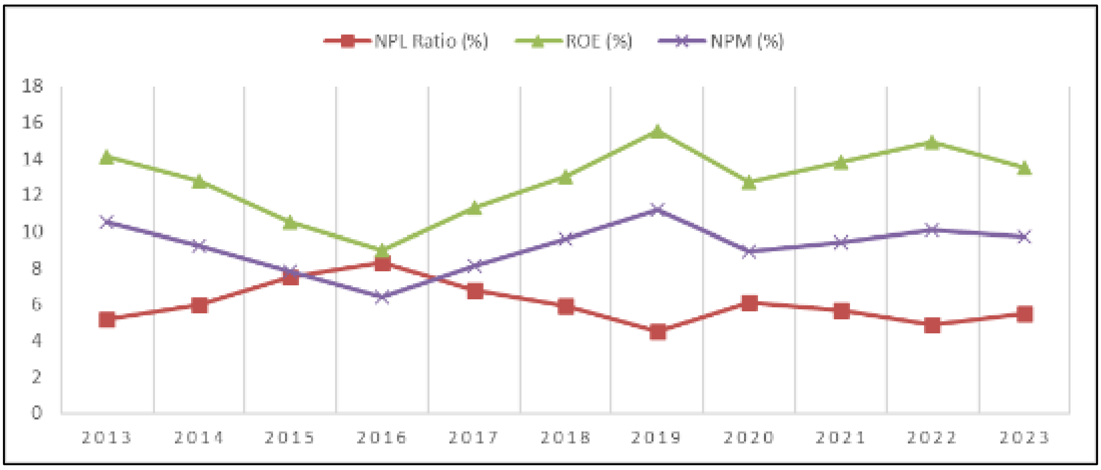

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Figure 2 Relationship between NPL and Profitability

The table highlights how fluctuations in NPL ratio impact the profitability metrics

Table 1 Regression Results

Variable	Coefficient	Standard Error	t-Value	p-Value
Constant	18.75	2.45	7.65	<0.01
NPL Ratio	-0.75	0.12	-6.25	<0.01

Objective two of the study was to analyse the effect of the capital adequacy ratio (CAR) on the return on assets (ROA)

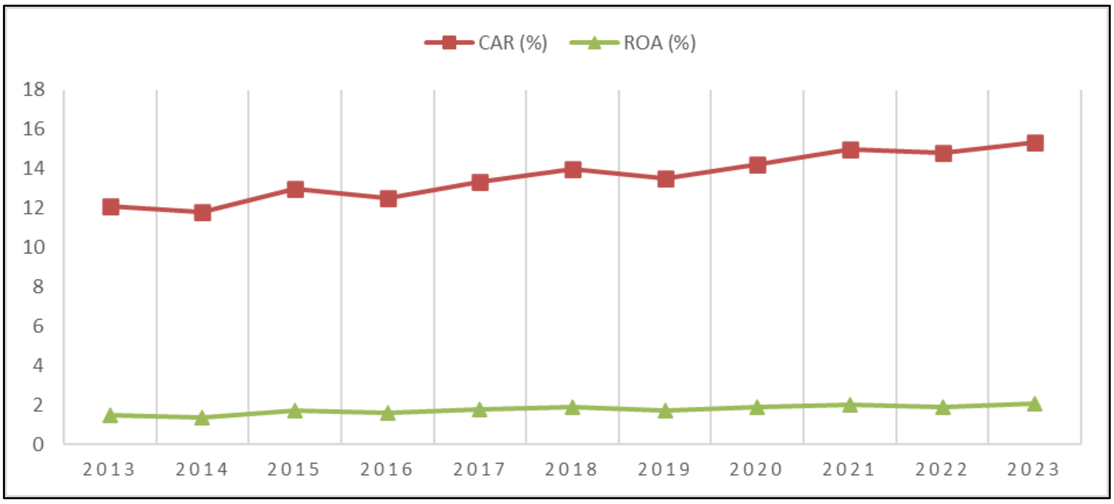

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Figure 3 Capital adequacy ratio (CAR) on the return on assets (ROA)

The figure above provides an annual overview of the capital adequacy ratio (CAR) and return on assets (ROA) for AB Bank from 2013 to 2023. CAR indicates the bank's capital buffer relative to its risk-weighted assets, while ROA measures how efficiently the bank's assets generate profits. The table shows a positive trend between CAR and ROA, suggesting that higher capital adequacy improves the bank's asset returns. This finding is contrast to what Mugwang's found. There was no significant relationship between capital adequacy and the risks that banks face such liquidity risk, credit risk, interest rate risk, return on assets ratio, return on equity ratio and revenue power ratio. For AB Bank, maintaining a strong CAR is crucial for ensuring financial stability and resilience against economic shocks. Recent studies, such as that by Ogunmokun et al. (2023), also emphasize the importance of capital adequacy. A higher CAR provides a cushion against financial shocks, promoting investor confidence and ensuring sustainable growth. These insights align with our findings, reinforcing the need for a strong capital base. Capital adequacy ratio protects depositors, as the bank has to comply with the minimum requirements set the regulators. Failure to do so might lead them to halt their operations.

Table 2 Regression results

Variable	Coefficient	Standard Error	t-Value	p-Value
Constant	0.85	0.25	3.4	<0.01
CAR	0.07	0.02	3.5	<0.01

4.4. Multiple Regression Analysis

4.4.1. Dependent Variable

- Return on equity (ROE)
- Independent Variables
- Non-performing loans (NPL) Ratio
- Capital adequacy ratio (CAR)
- Loan to deposit ratio (LDR)

Current ratio

Regression Model: Return on equity (ROE) Model

$$ROE = \beta_0 + \beta_1(\text{NPL Ratio}) - \beta_2(\text{CAR}) + \beta_3(\text{LDR}) + \beta_4(\text{Current ratio}) + \varepsilon$$

Where:
β_0 = Constant term
β_1 = Coefficient of NPL Ratio
β_2 = Coefficient of CAR
β_3 = Coefficient of LDR
β_4 = Coefficient of Current Ratio
ε = Error term

The regression table presents the results of the multiple regression analysis. The coefficients indicate the impact of each independent variable on the dependent variable (ROE). The t-values and p-values indicate the statistical significance of each coefficient. A p-value less than 0.05 indicates that the coefficient is statistically significant.

Table 3 Regression results

Variable	Coefficient	Standard Error	t-Value	p-Value
Constant	12.5	2.1	5.95	<0.01
NPL Ratio	-0.65	0.15	-4.33	<0.01
CAR	0.45	0.1	4.5	<0.01
LDR	0.25	0.12	2.08	0.04
Current Ratio	0.35	0.14	2.5	0.02

The regression analysis revealed significant relationships between various bank-specific variables and return on equity (ROE). Specifically, an increase in the non-performing loan (NPL) ratio negatively impacts ROE, while higher capital adequacy ratio (CAR), loan to deposit ratio (LDR), and current ratio are positively associated with ROE, with all relationships being statistically significant.

5. Conclusions

Relationship between non-performing loans and profitability- There is a strong negative relationship between NPL ratio and profitability metrics, such as Return on Equity (ROE) and Net Profit Margin (NPM). This implies that higher NPL ratios are associated with lower profitability. Non-performing loans are a cost to the bank as the planned interest income will be reduced and as a result affect the bank's profitability. Non-performing loans can be reduced through stricter credit assessments, continuous monitoring of borrowers' financial health, and proactive measures to recover overdue loans. Other factors such Assets, Shareholders Equity, Liquid Assets Deposits, Net Interest and Other Income Investments in Securities have an influence on the profitability of banks.

Capital Adequacy ratio versus return on assets -The positive relationship between CAR and ROA suggests that higher CAR is associated with better financial performance. Maintaining a strong CAR is crucial for ensuring financial stability and resilience against economic shocks, promoting investor confidence and ensuring sustainable growth for any commercial bank. A strong capital base allows banks to absorb potential losses, thereby enhancing financial stability and ability to generate profits. highly profitable banks can utilize their earnings for growth in their asset base and manage their operations effectively.

Loan to deposit ratio versus return on equity- There is balanced approach to lending and deposits, with the ratio staying within an optimal range that supports both liquidity and interest income generation. The higher the LDR, the riskier (and potentially more profitable) the bank's lending strategy. The difference between loan interest and deposit interest is of importance in assessing the profitability of the bank. The current ratio, which measures liquidity, shows a positive correlation with ROE. This finding is consistent with liquidity management theories, which emphasize the importance of maintaining adequate liquidity to meet short-term obligations and support operational efficiency. Higher liquidity levels enable the bank to respond effectively to unexpected financial needs, thereby contributing to improved financial performance.

Recommendations

Arising from the above this study recommends as follows:

- Management of AB bank should improve financial performance by maintaining a strong capital adequacy ratio through prudent capital management and regular stress testing.
- AB Bank should enhance credit risk management through stricter credit assessments and proactive recovery
- There is need for AB Bank Zambia to establish guidelines for debt collection practices to ensure fair and ethical treatment of clients, balancing the interests of both the financial institution and borrowers.
- AB Bank should partner with government agencies and non-governmental organizations to implement financial literacy programs which will aim at its clients and the general public
- Future research could examine how regulatory differences between Zambia and neighboring countries affect credit risk management strategies.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of ethical approval

This study was approved by the University of Zambia Humanities and Social Sciences Ethics Committee.

Author Contributions

Conceptualization, methodology writing review and editing and analysis (Cynthia Nambeye) The author has decided to published this version of the review article, Editing the article (DR. Brian Manchishi)

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Data Availability Statement

The datasets used during the current study are available from the corresponding author on rational request.

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