

Determinants of Profitability in Zambian Banks: An Empirical Study from 2010 to 2020

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How to cite this paper: Kaluba, C. C. (2024). Determinants of Profitability in Zambian Banks: An Empirical Study from 2010 to 2020. *Open Journal of Business and Management*, 12, 3104-3115. <https://doi.org/10.4236/ojbm.2024.125157>

Received: July 15, 2024

Accepted: September 1, 2024

Published: September 4, 2024

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Abstract

This study examines the determinants of profitability in the banking sector of Zambia between 2010 and 2020. Using prudential data obtained from the Bank of Zambia, the analysis focuses on the correlation between various financial variables and banks' profitability, measured by Return on Assets (ROA). The study investigates the influence of Total Assets, Shareholders' Equity, Liquid Assets, Deposits, Net Interest and Other Income, Investments in Securities, Gross Loans and Advances, and Non-Performing Loans on the profitability of Zambian banks. The findings reveal significant correlations between several key variables and banks' profitability. Total Assets, Shareholders' Equity, Liquid Assets, Deposits, Net Interest and Other Income, Investments in Securities, and Gross Loans and Advances exhibit positive correlations with profitability, suggesting that larger asset bases, stronger equity positions, adequate liquidity, stable deposit funding, higher income, prudent investments, and larger loan portfolios are associated with higher profitability. However, the relationship between Non-Performing Loans and profitability appears to be more nuanced, with variability observed among banks. These results underscore the importance of sound financial management practices in enhancing profitability and ensuring the stability of the banking sector in Zambia. The study contributes to the existing literature by providing insights into the determinants of profitability specific to the Zambian banking sector, thereby offering valuable information for policymakers, regulators, and industry stakeholders.

Keywords

Prudential Information, Financial Indicators, Total Assets, Shareholders' Equity, Liquid Assets, Deposits, Net Interest Income, Return on Assets (ROA), Financial Performance

1. Introduction

The role of the banking sector, in boosting growth and development is crucial as it helps in the distribution of resources and offers essential financial services. It's important for policymakers, regulators, investors and industry players to understand what factors impact banks profitability to maintain the stability of the system. In Zambia, where banking's a player in the economy studying what influences bank profitability is particularly significant.

This research aims to explore the factors affecting banks profitability in Zambia from 2010 to 2020. Using data from the Bank of Zambia this study will analyse how different financial aspects correlate with bank profitability focusing on Return on Assets (ROA). The study will specifically look into how Total Assets, Shareholders Equity, Liquid Assets Deposits, Net Interest and Other Income Investments in Securities Gross Loans and Advances and Non-Performing Loans impact banks profitability.

Through this analysis, the study aims to uncover the workings of the banking sector and gain insights, into what drives bank profitability.

The results of this research are anticipated to add to the pool of knowledge, on banking profitability and provide insights for policymakers, regulators, investors and professionals in the banking sector in Zambia. Additionally, grasping the factors influencing profitability can improve stability support resource distribution and encourage long lasting economic growth, in Zambia.

2. Literature Review

Understanding the determinants of profitability in the banking sector is essential for policymakers, regulators, and banking institutions themselves to enhance financial stability and sustainability. The following literature review synthesizes findings from ten empirical studies focused on identifying the factors affecting the profitability of banks in Zambia.

Extensive research has been conducted on the link, between managing working capital and the profitability of banks in Zambia. [Odhiambo \(2023\)](#) delved into this relationship. He discovered that effective working capital management plays a role in enhancing bank profitability. The study emphasized the importance of maintaining liquidity and operational efficiency for ensuring profitability within the banking industry. Odhiambo highlighted the significance of working capital management by stating, "Ensuring liquidity and operational efficiency through working capital management is vital for the profitability of banks in Zambia" ([Odhiambo, 2023](#)).

Expanding on this various factors impact the profitability of banks in Zambia. [Ngweshemi and Isiksal \(2023\)](#) pointed out that macroeconomic conditions such as GDP growth, inflation rates, bank specific variables and regulatory frameworks are determinants. Their research underscored how these factors interact with each other to influence performance significantly. They concluded that

“Macro economic conditions like GDP growth and inflation rates have an impact on the profitability of banks in Zambia” (Ngweshemi & Isiksal, 2023).

On the other hand, Banda (2022) assessed the effectiveness of performance management systems, at the Development Bank of Zambia. Despite efforts to enhance service delivery through these systems since 2015 Banda observed that inefficiencies persist within the public sector.

Banda mentioned that the Development Bank of Zambia has encountered obstacles, in implementing performance management systems resulting in enhancements in service provision.

Similarly, the landscape and macroeconomic conditions greatly influence bank performance. Simpasa, Nandwa and Nabassaga (2015) presented findings on the bank lending mechanism in Zambia indicating that price signals hold sway than quantity metrics in transmitting monetary policy particularly through larger banks. They noted that the impact of the bank lending channel is primarily felt by banks with effects on medium sized institutions and minimal influence, on smaller banks.

Furthermore, the integration of agency banking has been recognized as a factor that boosts performance by broadening outreach and cutting expenses. Kambua (2015) explored how agency banking enhances performance by enhancing accessibility and reducing costs concluding that it has significantly improved banks financial performance by expanding outreach and lowering operational expenditures.

Lastly discussions have delved into the progression and future strategies of the Bank of Zambia.

In a study conducted by Jere in 2014, the significance of the Bank of Zambia, in maintaining stability and fostering development was examined. Jere highlighted that the Bank of Zambia has played a role in stabilizing the system and driving economic growth in Zambia (Jere, 2014). Similarly, Gondwe (2014) delved into the advancements of banking in Zambia and proposed strategies, for future enhancements emphasizing the importance of ongoing efforts to strengthen financial stability and promote sustainable economic progress.

Looking at the performance of banks in South Africa can offer insights for banks. Lawa, Zogli and Dlamini (2021) identified performing loans, capital adequacy and GDP market price as key factors affecting bank performance. Their analysis emphasized the importance of managing performing loans and ensuring sufficient capital reserves for profitability. They highlighted that non-performing loans capital adequacy levels and GDP market prices significantly influence bank performance in South Africa (Lawa et al., 2021).

Boungou (2020) comparison between conventional banks, across Africa sheds light on findings. The study indicated that Islamic banks, ones tend to surpass conventional banks in terms of profitability. This suggests that alternative banking models could provide advantages under circumstances.

Boungou concluded that in Africa Islamic banks tend to perform than banks in terms of profitability, especially larger institutions (Boungou, 2020).

Exploring the performance of banks in Sub Saharan Africa, [Pelletier \(2017\)](#) found that foreign banks surpass ones due to their enhanced operational efficiency and lower funding costs. The study pointed out that “foreign banks in Sub Saharan Africa exhibit performance owing to their improved efficiency and reduced funding costs” ([Pelletier, 2017](#)). These results suggest that optimizing efficiency and effectively managing funding costs are crucial for boosting the profitability of banks.

Beyond Africa, [El-Kassem \(2017\)](#) and [Khan et al. \(2018\)](#) provide additional insights into the determinants of profitability in different sectors which can be applied to the banking sector in Zambia. [El-Kassem \(2017\)](#) looked at the banking sector in Qatar, highlighting the rapid growth and profitability of banks driven by firm-specific factors such as size, leverage, liquidity, and growth opportunities. These findings suggest that larger banks with efficient capital structures and strong growth prospects tend to be more profitable, a notion that resonates with the banking sector in Zambia. Similarly, [Khan et al. \(2018\)](#) examined the profitability of the telecommunications industry, emphasizing the significant impact of macroeconomic conditions and firm-specific variables on firm performance. Their study underscores the importance of maintaining adequate liquidity, managing credit risk, and leveraging growth opportunities, aligning with the findings of [Odhiambo \(2023\)](#) and [Ngweshemi & Isiksal \(2023\)](#), who also emphasize the critical role of liquidity management and macroeconomic factors in enhancing bank profitability. By integrating these perspectives, the current literature review highlights the multifaceted nature of profitability determinants, reinforcing the need for comprehensive strategies that encompass both internal management practices and external economic conditions to optimize bank performance in Zambia.

3. Methodology

3.1. Research Design

This study employs a quantitative research design to investigate the determinants of profitability in Zambian banks from 2010 to 2020. The research design involves the analysis of prudential data obtained from the Bank of Zambia, focusing on monthly performance indicators, including income statements and balance sheets, for all banks operating in Zambia during the specified period.

3.2. Sample Size and Sampling Techniques

The study sample included all commercial banks in operation in Zambia over the period January 2010 to December 2022. January 2010 was chosen because a number of Banks started their operations in 2009; In 2006, there were 13 commercial banks in Zambia, since 2008, 6 more subsidiaries of foreign banks were registered, bringing the total number to 19 commercial banks for the whole sector at the end of 2012.

3.3. Data Collection

The primary data source for this study is prudential information obtained from the Bank of Zambia. The data comprise monthly performance indicators for Zambian banks, specifically Balance Sheet and Income Statements from January 2010 to December 2020.

3.4. Variable Selection

The main dependent variable in this study is Return on Assets (ROA), which serves as a proxy for bank profitability. Independent variables include the growth rates of key financial indicators such as Total Assets, Deposits, Shareholders' Equity, Gross Loans and Advances, Investment in Securities and the quantity of non-performing loans as well as Revenue. These variables are selected based on their relevance to bank profitability and their availability in the prudential data provided by the Bank of Zambia.

3.5. Data Analysis

Pearson correlation coefficients were computed to quantify the strength and direction of the linear relationship between each variable and profitability metrics, specifically profit after tax.

Correlation coefficients were calculated for each bank individually, providing insights into the unique relationships between variables and profitability for each institution. The Correlation coefficients were interpreted to assess the degree of association between variables and profitability.

Positive correlation coefficients indicated a positive relationship, suggesting that increases in the variable were associated with higher profitability, while negative coefficients implied the opposite. The magnitude of correlation coefficients was also considered, with higher absolute values indicating a stronger association between variables. The average Return on Assets over the review period was calculated and used as a marker for profitability of the Banks.

4. Formation Mechanism of the Indicator System

4.1. Rationale for Choosing Return on Assets (ROA)

In this study, Return on Assets (ROA) is selected as the primary dependent variable to measure bank profitability. ROA is a widely accepted indicator of a bank's efficiency in utilizing its assets to generate profits. It provides a clear picture of how well a bank is performing in converting its assets into net income, making it a suitable proxy for profitability. This measure allows for comparative analysis across different banks, regardless of their size.

4.2. Selection of Independent Variables

The independent variables chosen for this study include the growth rates of Total Assets, Deposits, Shareholders' Equity, Gross Loans and Advances, Invest-

ment in Securities, Non-Performing Loans, and Revenue. These variables are selected based on their theoretical and empirical relevance to bank profitability:

- **Total Assets:** Represents the overall size and resource base of the bank, indicating its capacity to generate income.
- **Deposits:** Serve as the primary source of funding for banks, impacting their lending capabilities and profitability.
- **Shareholders' Equity:** Reflects the bank's financial strength and ability to absorb losses, influencing profitability.
- **Gross Loans and Advances:** Represent the bank's primary earning assets, directly linked to interest income.
- **Investment in Securities:** Reflect the bank's investment strategy and risk management, influencing income generation.
- **Non-Performing Loans (NPLs):** Indicate the quality of the loan portfolio, with higher NPLs typically reducing profitability due to increased provisioning costs.
- **Revenue:** Represents the total income generated by the bank, impacting overall profitability.

4.3. Conceptual Framework

The conceptual framework of this study is based on the hypothesis that the selected financial indicators significantly influence bank profitability, as measured by PAT. The framework posits that:

1) Positive Influences:

- An increase in Total Assets, Deposits, Shareholders' Equity, Gross Loans and **Advances**, Investment in Securities, and Revenue is expected to enhance profitability.

2) Negative Influence:

- A higher level of Non-Performing Loans is anticipated to negatively impact **profitability** due to the associated credit risks and required provisions.

5. Results and Discussion of Results

The examination of the correlation coefficients in **Table 1** reveals several variables that emerge as determinants of profitability for banks in Zambia. These determinants manifest varying degrees of influence on profitability and offer insights into the intricate dynamics within the Zambian banking sector.

5.1. Total Assets

Correlation coefficients for Total Assets range from -0.56 to 0.84 across different banks. Positive correlations (coefficients > 0) suggest that larger banks, as measured by total assets, tend to have higher profitability in most cases. For instance, Bank 5 exhibits a strong positive correlation of 0.84 between total assets and profitability, indicating that larger banks are generally more profitable, aligning with economies of scale and diversified revenue streams. Conversely,

Table 1. Correlation coefficients for variables against profit after tax.

Bank	<i>Total Assets</i>	<i>Equity</i>	<i>Liquid Assets</i>	<i>Deposits</i>	<i>Revenue</i>	<i>Investments In Securities</i>	<i>Gross Loans and Advances</i>	<i>Non-performing loans</i>	<i>Average Return on Assets</i>
Bank 1	0.2	0.13	0.19	0.2	0.43	0.08	0.2	0.14	-1.03%
Bank 2	0.23	0.13	0.22	0.2	0.59	0.23	0.25	0.16	0.10%
Bank 3	0.54	0.56	0.55	0.55	0.77	0.57	0.37	0.34	-0.10%
Bank 4	0.15	0.25	0.21	0.16	0.5	0.27	0.08	-0.09	0.19%
Bank 5	0.84	0.81	0.82	0.83	0.94	0.83	0.74	0.49	0.13%
Bank 7	0.32	0.52	0.36	0.24	0.75	0.43	-0.05	-0.19	0.41%
Bank 8	0.82	0.82	0.79	0.82	0.94	0.78	0.67	0.07	-0.19%
Bank 9	0.18	0.23	0.23	0.17	0.69	0.24	0.11	0.02	0.25%
Bank 11	0.36	0.34	0.35	0.37	0.84	0.39	0.37	0.05	-0.03%
Bank 12	0.09	0.17	0.07	0.09	0.53	0.07	0.11	0.04	-0.24%
Bank 14	-0.03	0.22	-0.01	-0.08	0.67	-0.06	0.13	-0.36	-0.21%
Bank 15	0.6	0.59	0.58	0.6	0.8	0.58	0.6	0.45	0.23%
Bank 16	0.53	0.53	0.53	0.53	0.69	0.45	0.5	0.44	0.15%
Bank 17	-0.16	0.05	-0.19	-0.17	0.16	-0.18	0	-0.26	0.23%
Bank 18	0.76	0.77	0.77	0.76	0.89	0.8	0.63	0.6	-0.22%
Bank 19	0.27	0.18	0.26	0.27	0.62	0.34	0.24	-0.17	0.16%
Bank 20	-0.56	-0.6	-0.52	-0.55	-0.25	-0.51	-0.62	-0.69	-0.08%

Source: Author Calculations.

Bank 8 also demonstrates a notable positive correlation of 0.82, reinforcing the relationship between larger asset bases and higher profitability. However, negative correlations imply that for some banks, larger asset sizes are associated with lower profitability. Banks with higher average ROA tend to have stronger positive correlations between total assets and profitability, indicating the significant contribution of larger asset bases to profitability, particularly for banks with positive average ROA. Conversely, banks with negative average ROA might not observe the same degree of positive correlation between total assets and profitability, suggesting that increasing asset size may not necessarily lead to improved profitability for struggling banks.

5.2. Shareholders' Equity

Correlation coefficients for Shareholders' Equity range from -0.60 to 0.82. Positive correlations indicate that banks with higher shareholders' equity tend to be more profitable, as stronger equity positions provide stability and confidence to stakeholders. For example, Bank 8 demonstrates a noteworthy positive correlation of 0.82 between shareholders' equity and profitability, suggesting that

well-capitalized banks are more profitable. Similarly, Bank 5 also shows a significant positive correlation of 0.81, supporting the notion that higher levels of shareholders' equity contribute positively to profitability. Negative correlations for some banks suggest that excessively high levels of shareholders' equity may not necessarily translate into higher profitability. Banks with stronger average ROA tend to have higher positive correlations between shareholders' equity and profitability, indicating that maintaining adequate capitalization is crucial for consistent profitability over time, even for banks facing profitability challenges.

5.3. Liquid Assets

Correlation coefficients for Liquid Assets range from -0.52 to 0.82 . Positive correlations imply that banks with higher proportions of liquid assets tend to have higher profitability, emphasizing the importance of maintaining adequate liquidity for efficient operations and profitability. For instance, Bank 5 exhibits a strong positive correlation of 0.82 between liquid assets and profitability, highlighting the critical role of liquidity in generating profits. Bank 15, despite not reflecting the direction of the relationship, also shows a significant positive correlation of 0.58 , indicating the relevance of liquid assets in determining profitability across banks. Negative correlations for certain banks suggest that excessive liquidity may indicate underutilization of funds, potentially leading to suboptimal profitability. Banks with positive average ROA demonstrate strong positive correlations between liquid assets and profitability, indicating the crucial role of liquidity in generating consistent profits, even for banks facing profitability challenges.

5.4. Deposits

Correlation coefficients for Deposits range from -0.55 to 0.83 . Positive correlations suggest that banks with higher levels of deposits tend to be more profitable, as deposits represent a stable and low-cost source of funding. Bank 5 displays a robust positive correlation of 0.83 between deposits and profitability, highlighting the significance of stable deposit funding for profitability. Bank 8 also exhibits a significant positive correlation of 0.82 , reinforcing the importance of deposits as a key driver of profitability in the banking sector. Negative correlations for some banks could indicate challenges in effectively leveraging deposit funds to generate profits. Banks with positive average ROA tend to show strong positive correlations between deposits and profitability, emphasizing the importance of stable and low-cost deposit funding for sustained profitability, even for struggling banks.

5.5. Net Interest and Other Income

Correlation coefficients for Net Interest and Other Income range from -0.25 to 0.94 . Strong positive correlations indicate that banks with higher net interest and other income tend to have higher profitability, underscoring the importance of

core banking activities in driving profits. For instance, Bank 5 displays a significant positive correlation of 0.94 between net interest and other income and profitability, emphasizing the substantial contribution of core banking activities to profitability. Bank 8 also shows a strong positive correlation of 0.78, highlighting the consistent relationship between income from interest and other sources and profitability across banks. Negative correlations for certain banks suggest challenges in generating sufficient income from interest and other sources, possibly due to unfavourable interest rate environments or weak demand for credit. Banks with positive average ROA demonstrate strong positive correlations between net interest and other income and profitability, indicating the significant contribution of core banking activities to profitability, even for banks facing profitability challenges.

5.6. Investments in Securities

Correlation coefficients for Investments in Securities range from -0.51 to 0.83 . Positive correlations suggest that investments in securities contribute positively to profitability for most banks, possibly providing additional income streams and diversification benefits. Bank 5 demonstrates a strong positive correlation of 0.83 between investments in securities and profitability, indicating the positive impact of these investments on profitability. Bank 15 also exhibits a significant positive correlation of 0.58 , indicating the role of securities investments in determining profitability across banks. Negative correlations for some banks indicate that investments in securities may not always enhance profitability and could even detract from it, possibly due to market volatility or poor investment decisions. Banks with positive average ROA tend to show strong positive correlations between investments in securities and profitability, suggesting the positive contribution of these investments to profitability, even across different profitability levels.

5.7. Gross Loans and Advances

Correlation coefficients for Gross Loans and Advances range from -0.62 to 0.74 . Positive correlations suggest that banks with larger loan portfolios tend to be more profitable, as interest income from loans is a primary revenue source for banks. For example, Bank 5 exhibits a noteworthy positive correlation of 0.74 between gross loans and advances and profitability, indicating that banks with larger loan portfolios tend to be more profitable. Bank 15 also demonstrates a significant positive correlation of 0.60 , indicating a consistent relationship between loan portfolios and profitability. Negative correlations for certain banks suggest challenges in managing loan portfolios effectively, leading to lower profitability, possibly due to higher levels of non-performing loans or inadequate risk management practices. Banks with positive average ROA exhibit positive correlations between gross loans and advances and profitability, indicating the importance of lending activities for generating profits, even for struggling banks.

5.8. Non-Performing Loans

Correlation coefficients for Non-Performing Loans range from -0.69 to 0.49 . Negative correlations indicate that banks with lower levels of non-performing loans tend to be more profitable, highlighting the detrimental impact of bad loans on bank profitability and the importance of effective credit risk management. For instance, Bank 5 shows a positive correlation of 0.49 between non-performing loans and profitability, indicating that despite elevated levels of bad debts, some banks can maintain profitability through effective risk management. Bank 11 exhibits a strong positive correlation of 0.05 , indicating a weaker relationship between non-performing loans and profitability compared to Bank 5. Positive correlations for some banks suggest that they may have higher profitability despite elevated levels of non-performing loans, possibly due to other factors offsetting the negative impact of bad debts. Banks with positive average ROA show varying correlations between non-performing loans and profitability, underscoring the importance of effective risk management practices in maintaining profitability, even for banks with positive average ROA. Similarly, banks with negative average ROA exhibit correlations between non-performing loans and profitability, highlighting the importance of managing credit risk effectively, particularly for banks facing profitability challenges.

6. Conclusion

The analysis of the banking sector in Zambia from 2010 to 2020 reveals that certain key factors significantly impact the profitability of banks in the country. Factors like Assets, Shareholders Equity, Liquid Assets Deposits, Net Interest and Other Income Investments in Securities and Gross Loans and Advances consistently show correlations with profitability across different banks. These results emphasize the role these factors play in determining the profitability of banks.

Total Assets Shareholders Equity, Liquid Assets Deposits, Net Interest and Other Income Investments in Securities and Gross Loans and Advances are elements influencing the profitability of banks. The positive connections seen between these factors and profitability suggest that larger asset bases, equity positions, sufficient liquidity levels, stable deposit funding sources, increased income from interest and other streams wise investments strategies and substantial loan portfolios all contribute to profitability for banks in Zambia.

However, it's worth noting that the link between Non Loans and profitability is more complex. While some banks exhibit correlations between Nonperforming Loans and profit margins. Indicating that lower bad debt levels are linked to increased profits. Others show positive or weaker relationships. This variability shows that the influence of Non-Performing Loans on profits may vary across different banks highlighting the importance of implementing effective risk management strategies to lessen the negative impacts of bad debts.

To sum up, the research emphasizes Total Assets, Shareholders Equity, Liquid

Assets Deposits, Net Interest and Other Income Investments in Securities and Gross Loans and Advances as factors determining profitability for banks in Zambia. These factors significantly impact the performance of banks and stress the necessity of adopting sound financial management practices to boost profitability and ensure stability within the banking industry.

These discoveries have implications, for policymakers, regulators and banking professionals when making strategic decisions to improve profitability and strengthen resilience within the banking sector amid changing economic circumstances.

While the study provides valuable insights into the determinants of bank profitability in Zambia by analyzing various financial variables and their correlations with Return on Assets (ROA), it has some notable deficiencies. One significant limitation is the reliance on correlation analysis without sufficiently addressing the potential causality between the independent variables and bank profitability. The study does not account for possible endogeneity issues or the influence of external macroeconomic factors that might affect profitability. Additionally, the study touches on the nuanced relationship between Non-Performing Loans and profitability but does not delve deeply into the reasons behind this variability or provide a comprehensive analysis of the underlying factors. Furthermore, the use of ROA as the sole measure of profitability might not capture the complete picture of bank performance, and incorporating additional profitability metrics such as Return on Equity (ROE) or Profit After Tax (PAT) could provide a more holistic view.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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