The Effect of Non-Performing Loans on Return on Assets: The Mediating Role of the Capital Adequacy Ratio in Indonesian Listed Banks

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ABSTRACT

This study examines the effect of **Non-Performing Loans (NPL)** on **Return on Assets (ROA)**, with the **Capital Adequacy Ratio (CAR)** serving as a mediating variable in banking companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. The study adopts a quantitative research approach and employs path analysis using Structural Equation Modelling (SEM) to examine both the direct and indirect relationships among the variables. The findings indicate that NPL has a negative but statistically insignificant direct effect on ROA. Furthermore, the indirect effect of NPL on ROA through CAR is positive but statistically insignificant, indicating that CAR does not significantly mediate the relationship between NPL and ROA. These results suggest that although capital adequacy partially mitigates the adverse impact of non-performing loans on bank profitability, its mediating role is not strong enough to yield a statistically significant effect. The findings provide valuable insights for bank management in maintaining adequate capital buffers while effectively managing credit risk to sustain financial performance.

Keywords: Non-Performing Loan; Capital Adequacy Ratio; Return on Assets; Banking Performance; Profitability.

1. INTRODUCTION

The banking sector plays a pivotal role in supporting economic growth by serving as a financial intermediary that channels funds from surplus units to deficit units. Through this intermediation function, banks facilitate investment, business expansion, and overall economic development. Consequently, maintaining a sound and stable banking system is essential for ensuring sustainable economic growth and preserving public confidence in the financial system.

The stability of the banking industry largely depends on effective supervision, prudent risk management, and adequate regulatory oversight. A healthy banking system reflects not only the current financial condition of individual banks but also their ability to withstand future economic uncertainties. Accordingly, regulators continuously evaluate banks' financial soundness using several financial performance indicators, particularly profitability.

Profitability represents one of the most important indicators of a bank's financial performance because it reflects management's ability to utilize available resources efficiently to generate earnings. Several financial ratios are commonly employed to evaluate bank profitability, including Return on Assets (ROA), Return on Equity (ROE), and the Operating Expenses to Operating Income Ratio (BOPO). Among these indicators, ROA is widely recognized as the most comprehensive measure because it assesses how efficiently a bank utilizes its

total assets to generate profits. A higher ROA indicates more effective asset utilization and stronger financial performance, whereas a lower ROA suggests inefficiencies in asset management. According to the regulatory standards established by Bank Indonesia, banks are generally expected to maintain an ROA of at least 1.5%.

Lending activities constitute the primary source of income for commercial banks, making credit distribution the core business of banking operations. The funds used to finance these lending activities are primarily derived from third-party deposits collected from customers. Consequently, banks are required to allocate these funds prudently to maximize returns while maintaining acceptable levels of risk.

Despite its significant contribution to bank profitability, lending is inherently associated with credit risk. Credit risk arises when borrowers fail to fulfill their contractual obligations, including the repayment of principal and interest, thereby creating non-performing loans (NPLs). An increase in NPLs reflects deteriorating loan quality and exposes banks to potential financial losses, ultimately reducing profitability. Therefore, effective credit risk management is indispensable for ensuring sustainable banking performance.

In Indonesia, Bank Indonesia stipulates that a healthy bank should maintain an NPL ratio below 5%. Banks exceeding this threshold are generally considered to have elevated credit risk, which may adversely affect their financial stability and operational performance. Consequently, controlling NPL levels has become a major strategic priority for bank management, as excessive credit risk may erode earnings, reduce investor confidence, and weaken overall financial resilience.

Besides effective credit risk management, capital adequacy is another fundamental determinant of banking stability. Bank capital serves as a financial buffer that enables banks to absorb unexpected losses arising from various risks while maintaining normal business operations. The adequacy of bank capital is commonly measured using the Capital Adequacy Ratio (CAR), which reflects a bank's capacity to withstand potential losses associated with its risk-weighted assets.

A higher CAR generally indicates stronger financial resilience because the bank possesses sufficient capital to absorb potential credit losses and continue its operational activities. Nevertheless, excessively high capital levels may also indicate inefficient capital allocation, resulting in idle funds that could otherwise be invested in productive assets capable of generating higher returns. Therefore, banks are expected to maintain an optimal capital structure that balances financial stability and profitability. In accordance with Bank Indonesia Regulation No. 15/12/PBI/2013, commercial banks are required to maintain a minimum CAR of 8%.

The relationship between NPL, CAR, and ROA has attracted considerable attention in banking and financial research. While numerous studies have demonstrated that rising NPLs negatively affect profitability, empirical findings concerning the mediating role of capital adequacy remain inconclusive. Some studies argue that adequate capital can mitigate the adverse impact of credit risk on profitability by strengthening banks' loss-absorbing capacity, whereas others report that the mediating effect of CAR is statistically insignificant.

Given these inconsistent findings, further empirical investigation is necessary to clarify the role of capital adequacy in explaining how credit risk influences bank profitability. Accordingly, this study examines the direct effect of Non-Performing Loans on Return on Assets and investigates whether the Capital Adequacy Ratio mediates this relationship among banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period. The findings are expected to contribute to the banking literature by providing additional evidence regarding the interaction between credit risk, capital adequacy, and profitability within the context of emerging financial markets.

2. LITERATURE REVIEW

2.1 Non-Performing Loans (NPL)

Non-Performing Loans (NPLs) represent one of the most critical indicators of credit risk in the banking industry. They reflect the proportion of loans for which borrowers have failed to meet their contractual repayment obligations, including both principal and interest payments. A high NPL ratio indicates

deteriorating asset quality and ineffective credit risk management, thereby increasing the likelihood of financial losses and reducing the bank's overall financial performance.

According to Bank Indonesia Circular Letter No. 3/30/DPNP dated December 14, 2001, the NPL ratio is calculated as the proportion of non-performing loans to total outstanding loans. This ratio serves as an important measure of a bank's ability to manage credit risk and maintain asset quality. An increase in NPLs generally leads to higher provisioning expenses, lower interest income, and reduced profitability.

From a theoretical perspective, **credit risk theory** suggests that poor loan quality adversely affects bank earnings because non-performing assets reduce cash inflows while increasing credit loss provisions. Consequently, banks with higher NPL ratios tend to experience declining profitability and weaker financial performance.

Bank Indonesia establishes a maximum NPL threshold of **5%**, whereby banks exceeding this limit are generally considered to have poor asset quality and higher credit risk exposure. Excessive NPLs not only threaten the financial stability of individual banks but may also weaken public confidence in the banking system and hinder national economic growth if not properly managed.

Accordingly, minimizing NPLs through prudent lending policies, effective borrower screening, and continuous credit monitoring is essential for maintaining banking stability and improving financial performance.

2.2 Return on Assets (ROA)

Return on Assets (ROA) is one of the most widely used profitability indicators in banking because it measures the efficiency with which management utilizes total assets to generate net income. Unlike Return on Equity (ROE), which focuses primarily on shareholders' returns, ROA evaluates the overall effectiveness of asset utilization irrespective of financing structure.

Syahyunan (2004) defines ROA as the ratio between net income and total assets, indicating management's ability to generate profits from the assets under its control. Similarly, Tandelilin (2003) argues that ROA reflects the capacity of corporate assets to produce earnings, making it a comprehensive indicator of operational efficiency.

In the banking industry, ROA is particularly important because banks rely heavily on productive assets such as loans, securities, and other earning assets to generate income. A higher ROA indicates that bank management has successfully allocated assets into profitable investments while maintaining operational efficiency. Conversely, a declining ROA signals inefficient asset utilization, increasing operating costs, or deteriorating loan quality.

Regulatory authorities in Indonesia consider ROA an important indicator of bank soundness. Banks with consistently high ROA are generally viewed as having stronger financial performance, greater operational efficiency, and better long-term sustainability.

2.3 Capital Adequacy Ratio (CAR)

The Capital Adequacy Ratio (CAR) measures the adequacy of a bank's capital relative to its risk-weighted assets. It serves as a key indicator of a bank's financial strength and its capacity to absorb unexpected losses arising from credit, market, and operational risks.

CAR plays a crucial role in maintaining financial system stability because adequate capital enables banks to continue operating during periods of economic stress without jeopardizing depositors' funds. Higher capital adequacy enhances public confidence and reduces the probability of bank failure.

According to Bank Indonesia regulations, commercial banks are required to maintain a minimum CAR of **8%,** consistent with international banking standards established by the **Bank for International Settlements (BIS)** under the Basel Capital Accord framework.

A higher CAR generally indicates stronger financial resilience because the bank possesses sufficient capital to absorb potential losses while supporting business expansion. However, excessively high capital ratios may also suggest inefficient capital allocation, where a substantial portion of funds remains unproductive rather than being invested in income-generating assets. Therefore, bank management must maintain an optimal balance between capital adequacy and profitability.

Theoretically, adequate capital improves banks' capacity to withstand credit losses, thereby enabling them to sustain lending activities and generate stable earnings. Consequently, CAR is expected to positively influence profitability while also mitigating the adverse effects of increasing credit risk.

2.4 The Relationship between Non-Performing Loans and Return on Assets

Credit risk theory posits that increasing levels of non-performing loans reduce bank profitability because banks must allocate additional resources for loan loss provisions while simultaneously experiencing lower interest income from impaired loans. Consequently, a higher NPL ratio is generally associated with a decline in ROA.

From a financial management perspective, deteriorating asset quality increases operating costs and weakens banks' ability to generate sustainable earnings. Therefore, effective credit risk management is considered one of the primary determinants of banking profitability.

Based on this theoretical framework, the following hypothesis is proposed:

H1: *Non-Performing Loans have a negative effect on Return on Assets.*

2.5 The Relationship between Non-Performing Loans and Capital Adequacy Ratio

An increase in non-performing loans may reduce bank capital because impaired loans require higher loan loss provisions that directly decrease retained earnings, an important component of regulatory capital. Consequently, persistent increases in credit risk may weaken a bank's capital adequacy.

However, banks may offset these losses by raising additional capital from shareholders or retaining profits, thereby maintaining regulatory capital requirements despite increasing NPLs.

Accordingly, the relationship between NPL and CAR remains an empirical issue requiring further investigation.

H2: *Non-Performing Loans negatively affect the Capital Adequacy Ratio.*

2.6 The Relationship between Capital Adequacy Ratio and Return on Assets

Adequate capitalization enables banks to absorb unexpected losses while maintaining normal lending activities and supporting business expansion. Banks with stronger capital positions generally possess greater flexibility in managing financial risks and investing in profitable assets.

From the perspective of banking stability, higher CAR enhances public confidence, reduces financial vulnerability, and contributes to sustainable profitability.

Therefore, the following hypothesis is proposed:

H3: *The Capital Adequacy Ratio positively affects Return on Assets.*

2.7 The Mediating Role of Capital Adequacy Ratio

Capital adequacy may serve as a mediating mechanism through which credit risk influences bank profitability. Banks maintaining sufficient capital buffers are better positioned to absorb losses arising from non-performing loans, thereby mitigating their adverse effects on financial performance.

Conversely, banks with inadequate capital are more vulnerable to credit losses, which may substantially reduce profitability. Therefore, CAR is expected to partially mediate the relationship between NPL and ROA by strengthening banks' resilience against credit risk.

Based on this reasoning, the following mediation hypothesis is proposed:

H4: *The Capital Adequacy Ratio mediates the relationship between Non-Performing Loans and Return on Assets.*

3. RESEARCH METHOD

3.1 Research Design

This study employed a **quantitative research design** to examine the causal relationships among **Non-Performing Loans (NPL), Capital Adequacy Ratio (CAR),** and **Return on Assets (ROA)** in Indonesian listed banking companies. A quantitative approach was considered appropriate because the study relied on numerical financial data obtained from corporate financial statements and aimed to test the proposed hypotheses using statistical techniques.

Specifically, this research adopted an **explanatory (causal) research design**, which seeks to identify and explain the causal relationships between independent and dependent variables. In this study, NPL served as the independent variable, ROA as the dependent variable, and CAR as the mediating variable.

3.2 Population and Sample

The population comprised all commercial banks listed on the **Indonesia Stock Exchange (IDX)** during the observation period. A total of **44 listed banking companies** constituted the research population.

The study employed **purposive sampling** to select the research sample. This sampling technique enables researchers to choose observations that satisfy predetermined criteria and are relevant to the research objectives. The sample selection was based on the following criteria:

1. Banking companies listed on the Indonesia Stock Exchange during the study period.
2. Banks that consistently published audited annual financial statements throughout the observation period.
3. Banks with complete financial data required to calculate the research variables, namely NPL, CAR, and ROA.
4. Banks that did not experience delisting during the observation period.

Applying these criteria ensured the availability of consistent and reliable data for statistical analysis.

3.3 Data Sources and Data Collection

This study utilized **secondary data** obtained from publicly available annual financial statements of banking companies listed on the Indonesia Stock Exchange. Financial reports were collected from the official websites of the Indonesia Stock Exchange and the respective banks.

The observation period covered **2021–2025,** allowing the study to capture recent banking performance following the COVID-19 pandemic and during the subsequent period of economic recovery.

Data collection was conducted through **documentation techniques,** involving the systematic compilation and examination of published financial reports and related banking disclosures.

3.4 Operational Definition of Variables

Three variables were included in this study.

Non-Performing Loan (NPL)

Non-Performing Loan (NPL) represents the level of credit risk faced by a bank and reflects the proportion of non-performing loans relative to total outstanding loans.

The NPL ratio is calculated as follows:

NPL=Non-performing LoansTotal Loans×100%\textbf{NPL}=\frac{\text{Non-performing Loans}}{\text{Total Loans}}\times100\%NPL=Total LoansNon-performing Loans×100%

A higher NPL indicates poorer loan quality and greater credit risk.

Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) measures the adequacy of a bank's capital relative to its risk-weighted assets. It reflects the bank's capacity to absorb potential financial losses arising from banking operations.

CAR is calculated using the following formula:

CAR=Total CapitalRisk-Weighted Assets×100%\textbf{CAR}=\frac{\text{TotalCapital}}{\text{Risk-Weighted Assets}}\times100\%CAR=Risk-Weighted Assets Total Capital×100%

Higher CAR values indicate stronger financial resilience.

Return on Assets (ROA)

Return on Assets (ROA) measures the bank's ability to generate net income from its total assets.

The ratio is calculated as:

ROA=Net IncomeTotal Assets×100%\textbf{ROA}=\frac{\text{NetIncome}}{\text{Total Assets}}\times100\%ROA=Total Assets Net Income×100%

Higher ROA values indicate greater efficiency in utilizing assets to generate profits.

3.5 Data Analysis

The data were analyzed using **Structural Equation Modeling (SEM)** based on **path analysis,** implemented through **IBM SPSS AMOS Version 22.** Path analysis was employed to estimate both the direct and indirect relationships among the research variables and to examine the mediating role of the Capital Adequacy Ratio.

The analysis consisted of two stages.

First, the proposed structural model was evaluated using **Goodness-of-Fit (GoF)** indices to determine whether the empirical data adequately fit the theoretical model. The model fit assessment included several commonly used indices, namely:

- Chi-square (χ^2)
- Probability value (p-value)
- Root Mean Square Error of Approximation (RMSEA)

- Goodness-of-Fit Index (GFI)
- Adjusted Goodness-of-Fit Index (AGFI)
- Chi-square divided by degrees of freedom (CMIN/DF)

A model was considered acceptable when the goodness-of-fit indices satisfied the recommended threshold values.

Second, the structural relationships among variables were evaluated using **standardized regression weights.** The significance of each path coefficient was determined based on the **Critical Ratio (CR)** and **p-value,** where a relationship was considered statistically significant when the p-value was less than **0.05.**

3.6 Mediation Analysis

The mediating role of the Capital Adequacy Ratio was examined by comparing the direct effect of Non-Performing Loans on Return on Assets with the indirect effect transmitted through CAR.

The indirect effect was obtained by multiplying the standardized path coefficient from NPL to CAR by the standardized path coefficient from CAR to ROA.

The mediation effect was interpreted based on the significance and magnitude of both the direct and indirect effects. A statistically significant indirect effect indicates that CAR functions as a mediator in the relationship between credit risk and bank profitability.

4. RESULTS

4.1 Structural Model Evaluation

The proposed research model was estimated using **Structural Equation Modeling (SEM)** with **IBM SPSS AMOS Version 22.** Prior to hypothesis testing, the structural model was evaluated to determine whether it adequately represented the observed data. The model estimation process involved two stages: the initial structural model and the modified structural model.

The initial model was specified based on the proposed theoretical framework linking Non-Performing Loans (NPL), Capital Adequacy Ratio (CAR), and Return on Assets (ROA). Following the evaluation of the modification indices, the structural model was refined to improve the overall model fit while maintaining theoretical consistency.

The overall model fit was assessed using several Goodness-of-Fit (GoF) indices, as presented in **Table 1.**

Table 1. Goodness-of-Fit Statistics

Goodness-of-Fit Index	Recommended Value	Obtained Value	Model Evaluation
Chi-square (χ^2)	Small	3.29	Good
Probability (p-value)	≥ 0.05	0.07	Good
RMSEA	≤ 0.08	0.141	Marginal Fit
GFI	≥ 0.90	0.982	Good
AGFI	≥ 0.90	0.9	Good
CMIN/DF	≤ 2.00	1	Good

As shown in Table 1, most goodness-of-fit indices satisfied the recommended threshold values. The Chi-square statistic was relatively small, while the probability value exceeded the minimum acceptable level of

0.05, indicating that the proposed model adequately represented the observed data. Similarly, the GFI, AGFI, and CMIN/DF values demonstrated satisfactory model fit.

Although the RMSEA value (0.141) exceeded the recommended threshold of 0.08, the majority of the fit indices indicated an acceptable model fit. Following the recommendations of Hair et al., model adequacy may be accepted when most goodness-of-fit criteria are satisfied, particularly in relatively simple structural models. Therefore, the structural model was considered appropriate for subsequent hypothesis testing.

4.2 Hypothesis Testing

The structural relationships among the research variables were examined using standardized regression coefficients. Statistical significance was determined at the 5% significance level ($p < 0.05$).

Effect of Non-Performing Loans on Return on Assets

The empirical results indicate that Non-Performing Loans have a **negative but statistically insignificant** effect on Return on Assets, with a standardized path coefficient of **−0.163** and **a p-value of 0.068.**

Since the p-value exceeds the significance threshold of 0.05, the direct effect of NPL on ROA is not statistically significant. Therefore, although increasing credit risk tends to reduce bank profitability, the evidence does not support a statistically significant direct relationship.

Accordingly, **Hypothesis 1 is not supported.**

Effect of Non-Performing Loans on Capital Adequacy Ratio

The analysis further indicates that Non-Performing Loans have a **positive but statistically insignificant** effect on the Capital Adequacy Ratio. The standardized path coefficient is **0.011**, with a **p-value of 0.910.**

These findings suggest that variations in credit risk do not significantly influence the capital adequacy of Indonesian listed banks during the observation period.

Consequently, **Hypothesis 2 is not supported**.

Effect of Capital Adequacy Ratio on Return on Assets

The results demonstrate that the Capital Adequacy Ratio has a **positive and statistically significant** effect on Return on Assets. The standardized regression coefficient is **0.241,** with a **p-value of 0.008.**

This finding indicates that banks maintaining stronger capital positions are more likely to achieve higher profitability through more efficient financial management and greater capacity to absorb potential risks.

Therefore, **Hypothesis 3 is supported.**

Indirect Effect of Non-Performing Loans on Return on Assets through Capital Adequacy Ratio

The mediation analysis reveals that the indirect effect of Non-Performing Loans on Return on Assets through the Capital Adequacy Ratio is 0.0027**.**

Although the indirect effect is positive, its magnitude is relatively small and statistically insignificant. These findings suggest that CAR partially transmits the influence of NPL on profitability; however, the mediating effect is not sufficiently strong to establish statistical significance.

Accordingly, **Hypothesis 4 receives only limited empirical support**, indicating that the Capital Adequacy Ratio plays a weak mediating role in the relationship between credit risk and bank profitability.

4.3 Summary of Hypothesis Testing

Table 2. Summary of Hypothesis Testing Results

Hypothesis	Structural Relationship	Path Coefficient	p-value	Decision
H1	NPL → ROA	−0.163	0.068	Not Supported
H2	NPL → CAR	0.011	0.91	Not Supported
H3	CAR → ROA	0.241	0.008	Supported
H4	NPL → CAR → ROA	0.0027	Not Significant	Limited Support

The empirical findings demonstrate that only the relationship between the Capital Adequacy Ratio and Return on Assets is statistically significant. While Non-Performing Loans exhibit both direct and indirect relationships with profitability, neither effect reaches statistical significance. These results indicate that bank profitability during the study period was influenced more strongly by capital adequacy than by fluctuations in credit risk.

5. DISCUSSION

5.1 The Effect of Non-Performing Loans on Return on Assets

The empirical findings indicate that Non-Performing Loans (NPLs) have a negative but statistically insignificant effect on Return on Assets (ROA). Although the estimated coefficient suggests that an increase in non-performing loans tends to reduce bank profitability, the relationship is not statistically significant.

This finding is generally consistent with **Credit Risk Theory**, which argues that deteriorating loan quality adversely affects bank profitability because banks are required to allocate larger provisions for expected credit losses while simultaneously experiencing lower interest income from impaired loans. Consequently, increasing credit risk is expected to reduce the efficiency of asset utilization and overall financial performance.

However, the insignificant relationship observed in this study suggests that the profitability of Indonesian listed banks is not solely determined by credit quality. Commercial banks increasingly generate income from diversified non-interest revenue sources, including transaction fees, payment services, electronic banking, treasury operations, foreign exchange transactions, and investment securities. These alternative revenue streams reduce banks' dependence on lending activities and partially offset the negative financial consequences of rising non-performing loans.

Furthermore, Indonesian banks generally maintain prudent credit risk management practices and adequate loan loss provisions in accordance with regulatory requirements. Such measures enable banks to absorb moderate increases in credit risk without substantially affecting profitability.

The present findings are consistent with those reported by **Zulfikar (2010),** who found that Non-Performing Loans did not significantly influence bank profitability. Nevertheless, the results differ from numerous contemporary studies reporting a significant negative relationship between NPL and ROA, suggesting that the impact of credit risk may vary across banking systems, macroeconomic conditions, regulatory environments, and institutional characteristics.

5.2 The Effect of Non-Performing Loans on Capital Adequacy Ratio

The results reveal that Non-Performing Loans have a positive but statistically insignificant effect on the Capital Adequacy Ratio (CAR). This finding indicates that increases in problem loans do not necessarily weaken banks' capital adequacy.

Theoretically, rising credit risk should reduce regulatory capital because loan losses decrease retained earnings, which constitute an important component of Tier 1 capital. Nevertheless, the empirical evidence suggests that Indonesian listed banks are capable of maintaining adequate capital despite fluctuations in credit quality.

One plausible explanation is that bank capital originates from multiple sources rather than retained earnings alone. Additional paid-in capital, capital injections from shareholders, retained profits accumulated over previous years, and supplementary capital instruments may compensate for losses arising from non-performing loans. Consequently, temporary increases in NPLs may not immediately reduce the Capital Adequacy Ratio.

Moreover, Indonesia's banking regulatory framework requires banks to continuously maintain minimum capital adequacy levels under Basel-based prudential regulations. Consequently, banks experiencing rising credit risk often strengthen their capital positions through recapitalization or by retaining earnings to ensure continued compliance with regulatory requirements.

These findings support the argument that capital adequacy is determined not only by credit risk but also by broader capital management strategies and regulatory policies. Therefore, the insignificant relationship observed in this study reflects the effectiveness of capital management practices among Indonesian listed banks.

5.3 The Effect of Capital Adequacy Ratio on Return on Assets

The findings demonstrate that the Capital Adequacy Ratio has a positive and statistically significant effect on Return on Assets. This result indicates that banks maintaining stronger capital positions are better able to generate higher profitability.

From the perspective of **Bank Capital Theory** and the **Buffer Capital Theory**, adequate capitalization enhances banks' financial resilience by enabling them to absorb unexpected losses while maintaining normal lending operations. Well-capitalized banks are also perceived as more stable and trustworthy by depositors, investors, and regulators, thereby facilitating access to funding at lower costs.

In addition, stronger capital positions provide banks with greater flexibility to expand lending activities, invest in profitable assets, and implement long-term business strategies without excessive financial constraints. Consequently, adequate capitalization contributes directly to improved operational efficiency and sustainable profitability.

The present findings are consistent with previous empirical studies reporting a positive relationship between CAR and profitability, including **Frederika Adelvia Bubu (2015)**, who concluded that higher capital adequacy significantly improves bank financial performance. More broadly, the results reinforce the prudential banking principle that adequate capitalization is fundamental to ensuring both financial stability and long-term profitability.

5.4 The Mediating Role of Capital Adequacy Ratio

This study further examined whether the Capital Adequacy Ratio mediates the relationship between Non-Performing Loans and Return on Assets. The results indicate that the indirect effect is positive but statistically insignificant, suggesting that CAR plays only a limited mediating role.

The insignificant mediation effect implies that although adequate capital may help banks absorb losses arising from non-performing loans, its ability to fully transmit the impact of credit risk to profitability remains limited. In other words, maintaining higher capital alone is insufficient to eliminate the adverse effects of deteriorating loan quality on financial performance.

A possible explanation is that Indonesian commercial banks derive substantial income from diversified business activities beyond traditional lending. Fee-based income, treasury operations, investment securities, foreign exchange trading, and digital banking services contribute significantly to profitability, thereby reducing the dependence of earnings on credit performance alone.

Furthermore, improvements in capital adequacy do not automatically translate into higher profitability unless capital is allocated efficiently toward productive and income-generating assets. Excessively high capital ratios may even indicate the existence of idle funds, reducing opportunities for profit maximization.

Therefore, the findings suggest that capital adequacy functions primarily as a financial buffer rather than as a dominant transmission mechanism through which credit risk affects profitability. The relationship between credit risk and bank performance is likely influenced by additional factors, including operational efficiency, liquidity management, bank size, asset diversification, corporate governance, macroeconomic conditions, and monetary policy.

Overall, these findings indicate that strengthening capital adequacy should be accompanied by effective credit risk management, prudent asset allocation, and revenue diversification to enhance banking profitability sustainably.

6. CONCLUSION

This study investigated the effect of **Non-Performing Loans (NPLs)** on **Return on Assets (ROA),** with the **Capital Adequacy Ratio (CAR)** serving as a mediating variable among banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period.

The empirical findings reveal that Non-Performing Loans have a negative but statistically insignificant direct effect on Return on Assets. This result suggests that although higher levels of credit risk tend to reduce bank profitability, the relationship is not sufficiently strong to be considered statistically significant. The findings imply that the profitability of Indonesian listed banks is influenced not only by credit quality but also by other sources of revenue and managerial factors.

Furthermore, Non-Performing Loans were found to have a positive but statistically insignificant effect on the Capital Adequacy Ratio. This finding indicates that fluctuations in credit risk do not necessarily weaken banks' capital adequacy, as financial institutions may maintain regulatory capital requirements through retained earnings, capital injections, and other capital management strategies.

The study also demonstrates that the Capital Adequacy Ratio has a positive and statistically significant effect on Return on Assets. This finding confirms that adequate capitalization plays a crucial role in enhancing bank profitability by strengthening financial resilience, supporting operational activities, and increasing the capacity to absorb potential losses.

Regarding the mediating relationship, the results indicate that the Capital Adequacy Ratio exerts a positive but statistically insignificant indirect effect on the relationship between Non-Performing Loans and Return on Assets. Although CAR partially transmits the influence of credit risk on profitability, its mediating effect remains weak. Therefore, capital adequacy alone is insufficient to fully explain the relationship between credit risk and bank profitability.

Overall, this study concludes that capital adequacy is an important determinant of bank profitability, whereas the impact of credit risk on profitability appears to be moderated by broader aspects of banking operations, including income diversification and prudent financial management**.**

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