priviet lab.
RESEARCH & PUBLISHING

Priviet Social Sciences Journal

Volume 6
Issue 5 May, 2026

Article 22

21-05-2026

The effect of capital adequacy ratio and loan to deposit ratio on return on assets: Banking companies implementing green banking

Liyanita Dewi Kurnia, Ade Manggala Hardianto, Yuli Novitasari

To cite this article: Kurnia, L. D., Hardianto, A. M., & Novitasari, Y. (2026). The effect of capital adequacy ratio and loan to deposit ratio on return on assets: Banking companies implementing green banking. *Priviet Social Sciences Journal, 6*(5), 269–282.
https://doi.org/10.55942/pssj.v6i5.1715

To link to this article: https://doi.org/10.55942/pssj.v6i5.1715

Priviet Social Sciences Journal
E-ISSN 2798-6314
P-ISSN 2798-866X
https://doi.org/10.55942/pssj.v6i5.1715

Volume 6
Issue 5
May Edition 2026

The effect of capital adequacy ratio and loan to deposit ratio on return on assets: Banking companies implementing green banking

Liyanita Dewi Kurnia*, Ade Manggala Hardianto, Yuli Novitasari

Universitas Sains Indonesia, Jl. Akses Tol No. 50 Gandasari, Cibitung, Bekasi, Jawa Barat 17530, Indonesia
*email: liyanitadewi.kurnia@lecturer.sains.ac.id

Received 8 December 2025
Revised 4 May 2026
Accepted 20 May 2026

ABSTRACT

This study examines and analyzes the effect of the capital adequacy ratio and loan-to-deposit ratio on return on assets in the context of green banking, specifically for banking companies listed on the Indonesia Stock Exchange (IDX) during the 2022-2024 period. This study aims to provide empirical evidence on how financial performance indicators, particularly capital adequacy and liquidity, influence bank profitability within the framework of sustainable banking practices. The capital aspect is measured using the capital adequacy ratio, which reflects a bank's ability to absorb potential losses and maintain financial stability. The liquidity aspect is measured using the loan-to-deposit ratio, which indicates the bank's effectiveness in channeling funds from deposits into loans. Meanwhile, profitability is measured using return on assets, which shows the bank's ability to generate profits from its total assets. The data used in this research are secondary data obtained from published financial statements and annual reports of banking companies. The sampling technique applied is purposive sampling, based on specific criteria aligned with the research objectives. From a population of 47 banking companies listed on the IDX, 12 companies were selected as the final sample, resulting in 36 observations over the three-year period. This study employs panel data regression analysis, and the data processing is conducted using E-Views version 13 software. The findings indicate that the capital adequacy ratio has a positive but statistically insignificant partial effect on return on assets. Likewise, the loan-to-deposit ratio has a positive but statistically insignificant partial effect on return on assets at the 5% significance level. However, the overall regression model is statistically significant, indicating that capital adequacy ratio and loan-to-deposit ratio jointly have explanatory relevance for profitability, although their individual effects are not significant. These results suggest that other factors, such as operational efficiency, credit risk management, macroeconomic conditions, and the quality of green banking implementation, may play a more dominant role in determining bank profitability.

Keywords: capital adequacy ratio; loan to deposit ratio; return on assets; green banking

1. INTRODUCTION

1.1. Research Background

Banking plays a crucial role in the economy as it functions as a financial intermediary that channels funds from surplus units (society) to deficit units (productive sectors) while also maintaining financial system stability. Through this intermediation function, banks contribute significantly to economic growth, capital formation, and financial inclusion. However, in carrying out these functions, banks are increasingly confronted with complex challenges, particularly in balancing financial performance with sustainable development goals and social-environmental responsibilities.

In recent years, the global financial sector has experienced a paradigm shift toward sustainability driven by environmental concerns, regulatory pressures, and stakeholder expectations. This has led to the emergence of the Green Banking concept, which emphasizes the integration of environmental sustainability into banking activities, including financing decisions, investment policies, and internal operations. Green banking focuses on reducing the environmental footprint of banking operations and promotes financing for environmentally friendly and sustainable projects.

The implementation of green banking practices has the potential to enhance bank profitability, particularly through improved operational efficiency and better risk management in credit portfolios. Environmentally responsible lending tends to reduce long-term risks, especially those associated with environmentally harmful projects, which, in turn, contributes to financial stability and profitability.

In addition to sustainability practices, bank performance is determined by internal financial fundamentals, particularly the capital adequacy and loan-to-deposit ratios. The Capital Adequacy Ratio reflects a bank's ability to absorb potential losses and maintain solvency under risk exposure. A higher capital adequacy ratio indicates stronger capital resilience, which can enhance public confidence and support long-term profitability.

In contrast, the Deposit Ratio measures the extent to which a bank utilizes its deposits to provide loans. An optimal loan to deposit ratio indicates effective intermediation and income generation through lending activities. However, excessively high loan-to-deposit ratios were utilized. According to Batten and Vo (2019), liquidity management is a key determinant of bank performance, as it directly influences both risk exposure and profitability.

Furthermore, profitability, measured by Return on Assets (ROA), reflects how efficiently a bank uses its assets to generate earnings. ROA is widely used by regulators, investors, and analysts as a key indicator of performance. Saeed and Izzeldin (2016) highlight that profitability is influenced by a combination of factors such as capital, liquidity, macroeconomic conditions, and regulatory frameworks.

Empirical findings regarding the relationship between the capital adequacy ratio, loan-to-deposit ratio, and return on assets remain inconsistent. Some studies have found that the capital adequacy ratio has both positive and negative effects on profitability, depending on how effectively banks manage credit risk and liquidity. Ozili (2018) emphasizes that excessive lending without proper risk assessment can reduce profitability despite higher income from loans.

In the Indonesian context, Mustika et al. (2025) confirm that variations in research results are influenced by differences in bank characteristics, time periods, and the adoption of sustainability practices such as green banking. Therefore, further empirical investigation is necessary, particularly focusing on banks that implement green banking principles and are listed on the Indonesia Stock Exchange.

Based on the above explanation, it is important to examine the effect of the capital adequacy ratio and loan-to-deposit ratio on return on Assets: Banking companies implementing Green Banking. This Study is expected to provide a deeper understanding of how financial fundamentals interact with sustainability practices in influencing bank profitability and contribute to the development of sustainable financial strategies in the banking sector.

1.2. Research Objectives

The goals of this research are to examine real evidence. First, find out how the capital adequacy ratio affects the return on assets of green banking companies that are listed on the Indonesia Stock Exchange.

Second, look into how the loan to deposit ratio affects the return on assets of green banking companies that are listed on the Indonesia Stock Exchange. Third, look at how the capital adequacy ratio and loan to deposit ratio affects the return on assets of green banking companies that are listed on the Indonesia Stock Exchange at the same time.

2. LITERATURE REVIEW

2.1. Legitimacy Theory

Legitimacy theory holds that organizations, as part of society, can only survive if their operations are perceived to be in line with the value system and norms upheld by the society in which they operate. This theory emphasizes that companies must continuously ensure that their activities, policies, and products are socially acceptable to maintain legitimacy. One of the main ways Companies achieve this through transparent disclosures in corporate reports, such as annual and sustainability reports (Suchman, 1995; Deegan, 2002).

According to legitimacy theory, organizations actively seek to justify their existence by aligning their operations with the expectations of society. When there is a gap between corporate actions and public expectations, companies may use disclosure strategies to reduce this gap and maintain their legitimacy (Dowling & Pfeffer, 1975). Furthermore, disclosing financial performance, including profitability and risk management indicators, can function as a legitimizing tool used by companies to influence public perception and meet stakeholder expectations regarding corporate performance. Companies with better financial ratios and transparent reporting practices are more likely to gain public trust and sustain their legitimacy in the long term.

2.2. Hypothesis Development

2.2.1. The Relationship Between Capital Adequacy Ratio and Return on Assets

The capital adequacy ratio indicates the extent to which a bank's assets, including loans, securities, and interbank placements, are financed by its capital in addition to funds obtained from external sources such as public deposits, borrowings, and other liabilities. The capital adequacy ratio serves as a key indicator of a bank's financial strength and ability to absorb potential losses arising from operational and credit risks.

Banks that maintain an adequate capital adequacy ratio are better positioned to ensure customer protection and sustain overall financial stability. A strong capital adequacy ratio indicates that a bank has sufficient capital reserves to withstand unexpected losses, thereby enhancing public confidence and supporting long-term operational continuity. Furthermore, regulators often impose minimum capital adequacy ratio requirements to ensure that banks operate within a safe risk threshold and maintain systemic stability.

The higher a bank's capital adequacy ratio, the greater its capacity to manage and mitigate the risk of financial loss. However, excessively high capital levels may also indicate that the bank is not optimal. Utilizing its funds to generate income could potentially reduce profitability. Therefore, maintaining an optimal capital adequacy ratio level is essential to balance risk management and profit generation (Astuti, 2022).

H1: Capital Adequacy ratio has a positive effect on Return on Assets

2.2.2. The Relationship between Loan to Deposit Ratio and Return on Assets

The loan to Deposit Ratio is the ratio between the total loans disbursed by a bank and the total funds collected from third-party deposits. This ratio reflects the bank's liquidity condition as well as its efficiency in channeling funds into productive lending activities. The loan to deposit ratio is an important indicator used to assess how effectively a bank performs its intermediation function, namely transforming public deposits into credit that generates income.

A higher loan-to-deposit ratio indicates that a larger proportion of deposited funds has been allocated to loans, which can potentially increase the bank's interest income and profitability. May face difficulties in meeting short term withdraw demands from depositors, conversely, a low loan to deposit ratio suggest that the bank is being more conservative in lending, which may reduce risk but can also indicate inefficiency in utilizing available funds to generate income.

Therefore, maintaining an optimal level of loan to deposit ratio is crucial for balancing liquidity risk and profitability. An appropriate loan to deposit ratio level enables banks to maximize returns while still maintaining sufficient liquidity to meet their obligations. In this context, the higher the loan-to-deposit ratio, the greater the potential for profit generation, provided that credit risk is properly managed and lending activities are conducted prudently.

H2: Loan to Deposit Ratio has a positive effect on Return on Assets

The conceptual framework of this study is as follows (see Figure 1):

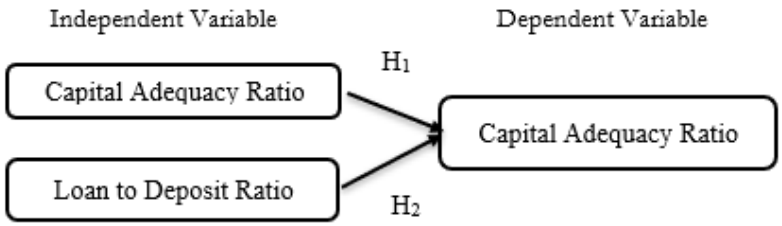

Figure 1. Model Framework

3. METHODOLOGY

3.1. Sources of Data

This study employed a quantitative approach. As stated by Sugiyono (2019), a quantitative approach is a systematic and structured scientific method used to examine phenomena through numerical data and statistical analysis. This approach emphasizes objectivity, measurement, and the use of statistical tools. According to Creswell (2018), quantitative research is widely used to test theories by examining the relationships among variables using measurable data and, statistical procedures.

The population consists of banking companies listed on the Indonesia Stock Exchange (IDX) during the 2022-2024 period, with a total of 47 banks. From this population, a sample of 12 banks was selected, resulting in 36 observations over a three-year period. The sampling technique used was purposive sampling, a non-probability sampling method that selects samples based on specific criteria relevant to the research objectives. This method ensured that the selected samples met the requirements necessary for an accurate analysis. According to Sekaran and Bougie (2020), purposive sampling allows researchers to obtain more relevant and reliable data by focusing on samples that meet predefined criteria. The criteria used for selecting the sample were as follows:

Table 1. Sample Selection Criteria

No	Sample Selection Criteria	Total
1	Banking Companies listed on IDX during 2022-2024	47
2	Banks that consistently published annual and sustainability reports during 2022-2024	-20
3	Banks with incomplete financial data related to Capital Adequacy Ratio (CAR), Loan-to-Deposit Ratio (LDR), and ROA	-10
4	Banks that did not implement Green Banking disclosure consistently	-5
Final research sample		12
Total observations (12 x 3 years)		36

Source: Data Processed, 2026

Based on the above criteria, the list of sample companies is as follows (see Table 2):

Table 2. List of Sample Companies

No.	Company Name	Stock Code
1	PT Bank Raya Indonesia	AGRO
2	PT Bank MNC Internasional Tbk	BABP
3	PT Bank Mestika Dharma Tbk	BBMD
4	PT Bank Negara Indonesia (Persero) Tbk	BBNI
5	PT Bank Rakyat Indonesia (Persero) Tbk	BBRI
6	PT Bank Pembangunan Daerah Banten Tbk	BEKS
7	PT Bank Pembangunan Daerah Jawa Barat dan Banten Tbk	BJBR
8	PT Bank Mandiri (Persero) Tbk	BMRI
9	PT Bank CIMB Niaga Tbk	BNGA
10	PT Bank Syariah Indonesia Tbk	BRIS
11	PT Bank BTPN Tbk	BTPN
12	PT Bank Syariah Indonesia Tbk	INPC

Source: Data Processed, 2026

The type of data used is secondary data, which includes financial statements and sustainability reports of banks. Secondary data were chosen because they are readily available, reliable, and audited, making them suitable for quantitative analysis. The data were obtained from the official website of the IDX, namely www.idx.co.id as well as from the respective company website. The use of secondary data is consistent with quantitative research practices, as it enables efficient data collection and supports large-scale analysis across multiple periods.

3.2. Variable Definition and Measurement

3.2.1. Capital Adequacy Ratio

The capital adequacy ratio is the ratio between a bank's capital and its total risk-weighted assets. This ratio measures the extent to which a bank has sufficient capital to absorb potential losses arising from its exposure and to fulfil both its short- and long-term obligations. The capital adequacy ratio is widely recognized as a key indicator of the soundness and stability of a bank's capital.

A higher capital adequacy ratio indicates that the bank has a stronger capital base to withstand financial shocks, thereby enhancing its ability to manage risks and maintain operational sustainability. Safeguard depositor funds and comply with the regulatory requirements. Conversely, a low capital adequacy ratio may signal vulnerability to financial distress, as banks may not have sufficient capital to cover unexpected losses.

In the banking industry, regulators establish minimum capital adequacy ratio requirements to ensure that financial institutions operate at a safe level of risk. Therefore, maintaining an optimal level of capital adequacy ratio is essential not only for regulatory compliance but also for supporting profitability and long-term growth. However, high capital levels may indicate inefficiency in capital utilization, as funds that could otherwise be invested in income-generating assets remain idle.

The formula used to measure the capital adequacy ratio is as follows:

$$Capital\ Adequacy\ Ratio = \frac{Total\ Capital}{Risk\ Weighted\ Assets}\ x\ 100\%$$

3.2.2. Loan to Deposit Ratio

The loan-to-deposit ratio is the ratio between the total loans granted by a bank and the total third-party funds collected from deposits. This ratio is used to measure a bank's ability to channel funds effectively while maintaining adequate liquidity. Loan to deposit ratio reflects both the bank's liquidity

position and its efficiency in performing its intermediation function, namely transforming public deposits into productive loans that generate income.

A higher loan-to-deposit ratio indicates that a larger portion of the bank's funds has been allocated to lending activities, which can potentially increase interest income and overall profitability. However, a high loan-to-deposit ratio may signal that the bank is too aggressive in lending. This could lead to liquidity constraints and increased risk if many depositors withdraw their funds at the same time. Conversely, a low loan-to-deposit ratio suggests that the bank is more conservative in its lending strategy, which may reduce risk but also indicates less optimal utilization of available funds.

According to research by Rahayu (2020), a higher loan-to-deposit ratio reflects a bank's aggressive credit distribution strategy, but if it exceeds a certain threshold. This can expose banks to liquidity risks and reduce their financial stability. Therefore, maintaining an optimal level of loan to deposit ratio is crucial to balance profitability and risk management. The formula used to measure the loan-to-deposit ratio is as follows:

$$Loan\ to\ Deposit\ Ratio = \frac{Total\ Loans}{The\ Third\ Party\ Funds}\ x\ 100\%$$

where total loans represent the total credit disbursed by the bank, and total third-party funds include savings, demand deposits, and time deposits collected from customers.

3.2.3. Return On Assets

Return on assets is a measure of a bank's profitability that indicates how effectively the bank can generate profits from its total assets. This ratio reflects the efficiency of management in utilizing bank resources to produce earnings. Return on assets is considered one of the most important indicators of financial performance, as it provides a comprehensive picture of how well a bank manages its assets to generate net income.

A higher return on assets value indicates that the bank is more efficient in converting its assets into profit, which reflects strong operational performance and effective utilization of its assets, which may be caused by high operational costs, poor credit management, or suboptimal asset allocation. The higher the return on assets, the greater the bank's ability to generate profits from its assets, which also enhances investor confidence and financial performance.

Return on assets is widely used by regulators, investors, and financial analysts as a key indicator to assess a bank's operational efficiency and overall performance. It is also an important benchmark for comparing the profitability of different banks within the industry. Therefore, maintaining a stable and increasing return on assets is essential for ensuring the sustainability and competitiveness of banks in the financial market. The formula used to measure the return on assets ratio is as follows:

$$Return\ On\ Assets = \frac{Net\ Income}{Total\ Assets}\ x\ 100\%$$

where net income represents the bank's profit after tax, and total assets represent all resources owned and controlled by the bank during a specific period (see Table 3).

Table 3. Operational Definition of Variables

Variable	Definition	Indicator	Formula	Scale
Capital Adequacy Ratio (X_1)	Ratio measuring bank capital adequacy	CAR	Capital/Risk Weighted Assets x 100%	Ratio
Loan to Deposit Ratio (X_2)	Ratio measuring liquidity level	LDR	Total Loans/Third Party Funds x 100%	Ratio
Return on Assets (Y)	Ratio measuring profitability	ROA	Net Income/Total Assets x 100%	Ratio

Source: Data Processed, 2026

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics

The sample of the research consists of 12 banks, and the research period is 2022-2024, with 36 observations. Table 4 is a descriptive statistic of the variables used in this study.

Table 4. Descriptive Statistical Test Results

	ROA	CAR	LDR
Mean	292.6111	0.848956	2940.472
Median	271.5000	0.853300	2566.000
Maximum	1143.000	1.052800	5370.000
Minimum	25.00000	0.456000	1819.000
Std. Dev.	209.5533	0.093755	1005.828
Skewness	1.899842	-1.704205	1.206533
Kurtosis	8.733135	10.10600	3.065073
Jarque-Bera	70.95967	93.16864	8.740690
Probability	0.000000	0.000000	0.012647
Sum	10534.00	30.56240	105857.0
Sum Sq. Dev.	1536941.	0.307651	35409129
Observations	36	36	36

Source: Data Processed by E-views 13, 2026

Based on Table 4, the dependent variable in this study is return on assets (ROA). The ROA variable has a mean value of 292.611, a median value of 271.500, a maximum value of 1143.000, a minimum value of 25.000, and a standard deviation of 209.553. The first independent variable is the capital adequacy ratio (CAR), which has a mean value of 0.848956, a median value of 0.853300, a maximum value of 1.052800, a minimum value of 0.456000, and a standard deviation of 0.093755. The second independent variable is the loan-to-deposit ratio (LDR), which has a mean value of 2940.472, a median value of 2566.000, a maximum value of 5370.000, a minimum value of 1819.000, and a standard deviation of 1005.828. These descriptive statistics show that the three variables vary across the 36 observations, with the highest dispersion found in the loan-to-deposit ratio.

4.2. Regression Model Suitability Test Results

For more details, see Table 5, Table 6, and Table 7.

Table 5. Chow Test (Fixed Effect Model)

Redundant Fixed Effects Tests Equation: Untitled Test: Cross-section fixed effects			
Effects Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	11.359669	(11,22)	0.0000
Cross-section Chi-square	68.367356	11	0.0000

Source: Data Processed by E-views 13, 2026

Table 6. Haussman Test (Random Effect Model)

Correlated Random Effects – Hausman Test Equation: Untitled Test: Cross-section random effects			
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	0.300273	2	0.8606

Source: Data Processed by E-views 13, 2026

Table 7. Langrange Multiplier Test (Common Effect Model)

Lagrange Multiplier Tests for Random Effects Null hypotheses: No effects Alternative hypotheses: Two-sided Breusch-Pagan and one-sided alternatives			
Test	**Cross-section**	**Time**	**Both**
Breusch-Pagan	21.26980(0.0000)	1.168884(0.2796)	22.43868(0.0000)
Honda	4.611919(0.0000)	-1.081150(0.8602)	2.496631(0.0063)
King-Wu	4.611919(0.0000)	-1.081150(0.8602)	0.814431(0.2077)
Standardized Honda	5.052833(0.0000)	-0.795753(0.7869)	-0.000188(0.5001)
Standardized King-Wu	5.052833(0.0000)	-0.795753(0.7869)	-1.328429(0.9080)
Gourieroux, et al.	--	--	21.26980(0.0000)

Source: Data Processed by E-views 13, 2026

The Random Effects Model was used in this study, as it passed the model suitability tests, including the Chow Test, which was 0.0000, which is less than 0.05. Therefore, we used the Hausman Test to proceed with further analysis. The Hausman Test shows a probability value of 0.8606, which is higher than 0.05; therefore, it satisfies the conditions needed for using the Random Effects Model. The last step was to check the Breusch-Pagan value and compare it with the general effects model value using the Lagrange Multiplier Test. The Breusch-Pagan test showed a score of 0.000, which is less than 0.05; therefore, the Random Effects Model was the best choice for this study. According to Valdiansyah and Murwaningsari (2022), classical assumption tests are not required if the Random Effects Model is chosen as the best model.

4.3. Partial Regression Test

Table 8. Partial Hypothesis Test Result

Variable	**Expected β**	**Coefficient**	**Sig.**	**Description**
Capital Adequacy Ratio	+	481.6877	0.2104	H1 not supported
Loan to Deposit Ratio	+	0.067419	0.0638	H2 not supported

Source: Data Processed by E-views 13, 2026

Based on Table 8, the capital adequacy ratio has a probability value of 0.2104, which is greater than the 0.05 significance level. Therefore, H1 is not supported. Although the regression coefficient of 481.6877 shows a positive direction, the effect of the capital adequacy ratio on return on assets is not statistically significant. The loan-to-deposit ratio also has a probability value of 0.0638, which is greater than 0.05. Therefore, H2 is not supported at the 5% significance level. Its coefficient of 0.067419 indicates a positive direction, but this effect is also not statistically significant. Thus, both independent variables show positive coefficient signs, but neither has a significant partial effect on return on assets.

4.4. Hypothesis Results

Table 9. Regression Result (Random Effect Model)

Dependent Variable: Y				
Method: Panel Least Squares				
Date: 02/05/26 Time: 09:10				
Sample: 2022–2024				
Periods included: 3				
Cross-sections included: 12				
Total panel observations: 36				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-314.5629	296.9259	-1.059399	0.2971
X1	481.6877	377.1145	1.277298	0.2104
X2	0.067419	0.035152	1.917939	0.0638
R-squared	0.206048	Mean dependent var		292.6111
Adjusted R-squared	0.157930	S.D. dependent var		209.5533
S.E. of regression	192.2953	Akaike info criterion		13.43560
Sum squared resid	1220257	Schwarz criterion		13.56756
Log likelihood	-238.8407	Hannan-Quinn criter.		13.48165
F-statistic	4.282113	Durbin-Watson stat		0.458940
Prob(F-statistic)	0.022213			

Source: Data Processed by E-views 13, 2026

Based on the results of the research model regression in the Table 9, the following multiple linear regression equation was obtained:

$$\text{Return On Assets}_{it} = -314.6 + 481.7*\text{Capital Adequacy Ratio} + 0.067*\text{Loan to Deposit Ratio}$$

The regression equation shows that the constant value is -314.6. This value represents the estimated return on assets when the capital adequacy ratio and loan-to-deposit ratio are equal to zero; therefore, it should not be interpreted as evidence of a negative relationship between the independent variables and return on assets. The coefficient of the capital adequacy ratio (X1) is 481.7, indicating a positive association with return on assets, assuming other variables remain constant. However, this effect is not statistically significant because the probability value is 0.2104. The coefficient of the loan-to-deposit ratio (X2) is 0.067, which also indicates a positive association with return on assets, assuming other variables remain constant. Nevertheless, this effect is not statistically significant at the 5% level because the probability value is 0.0638. The Prob(F-statistic) value of 0.022213 indicates that the regression model is jointly significant, meaning that the independent variables collectively have explanatory relevance for ROA even though their individual effects are not statistically significant.

4.4.1. Capital Adequacy Ratio has a positive but insignificant influence on Return on Assets

With a p-value of 0.2104, which is higher than the significance level of 0.05, the first hypothesis test indicates that the capital adequacy ratio has no statistically significant partial effect on return on assets. The coefficient is positive, not negative, because the regression result shows a coefficient of 481.6877. However, the positive coefficient cannot be interpreted as a meaningful effect because the probability value exceeds the predetermined significance threshold. Therefore, the hypothesis that the capital adequacy ratio has a positive and significant effect on return on assets is not supported.

This finding suggests that the level of capital adequacy owned by banks does not necessarily determine their ability to generate profits through asset utilization. One possible explanation is that banks with higher capital adequacy may hold capital primarily to meet regulatory requirements and mitigate risk

rather than to expand income-generating assets. In the context of green banking, banks may also prioritize sustainability, compliance, and risk control over short-term profitability.

It can be concluded that while the capital adequacy ratio is important for maintaining financial stability and meeting regulatory standards, it is not a dominant factor in determining bank profitability when it is not supported by efficient asset management, credit risk control, and effective operational strategies.

4.4.2. Loan to Deposit Ratio has a positive but insignificant influence on Return on Assets

The results of the second hypothesis test indicate that the loan-to-deposit ratio has no statistically significant partial effect on return on assets, as shown by a p-value of 0.0638, which is greater than the 0.05 significance level. The coefficient is positive, not negative, because the regression result shows a coefficient of 0.067419. This means that an increase in the loan-to-deposit ratio is associated with an increase in return on assets, but the association is not strong enough to be considered statistically significant at the 5% level. Therefore, the hypothesis that the loan-to-deposit ratio has a positive and significant effect on return on assets is not supported.

This finding differs from the research conducted by Wangarry et al. (2023), which found that the loan-to-deposit ratio had a significant effect on bank profitability. The difference in results may be caused by variations in research periods, sample characteristics, banking conditions, or the implementation of green banking practices. Banks that adopt sustainable finance principles may prioritize risk management and long-term stability over aggressive lending, which can influence the liquidity-profitability relationship.

Although a higher loan-to-deposit ratio reflects a greater level of credit distribution relative to third-party funds, it does not automatically increase profitability. Higher lending activity may be accompanied by increased credit risk, inefficient loan allocation, rising non-performing loans, or higher operational costs. These factors can weaken the potential positive effect of lending activity on profitability.

It can be concluded that a bank's ability to generate profits from its assets is not determined only by the level of loan-to-deposit ratio, but also by the quality of credit management, risk control, liquidity management, and operational efficiency. In the context of green banking, more cautious lending policies focused on sustainable and low-risk sectors may further explain the insignificant relationship between loan-to-deposit ratio and return on assets.

5. CONCLUSION, LIMITATIONS AND SUGGESTIONS

5.1. Conclusion

This study leads to three main conclusions based on the results of the data analysis and hypothesis testing. First, capitalization, as measured by the capital adequacy ratio, has a positive but statistically insignificant partial effect on return on assets. This finding indicates that the level of capital adequacy owned by banks is not a determining factor in influencing profitability at the 5% significance level. Although the capital adequacy ratio plays an important role in maintaining financial stability and meeting regulatory requirements, it does not directly contribute to the bank's ability to generate profits from its assets unless it is supported by efficient asset utilization and operational performance.

Second, liquidity, as proxied by the loan-to-deposit ratio in banks implementing green banking practices, also has a positive but statistically insignificant partial effect on return on assets at the 5% significance level. This result implies that the level of credit distribution relative to third-party funds does not necessarily determine a bank's profitability. Although the loan-to-deposit ratio reflects the bank's intermediation function, its impact on profitability depends on the quality of credit management, risk control, and the bank's ability to maintain liquidity balance.

Third, the regression model is jointly significant, as shown by the Prob(F-statistic) value of 0.022213. This indicates that the capital adequacy ratio and loan-to-deposit ratio collectively have explanatory relevance for return on assets, although each variable does not show a significant partial effect. Overall, the findings suggest that capitalization and liquidity are not the main individual determinants of profitability in banking companies implementing green banking. Other factors, such as operational

efficiency, credit risk, macroeconomic conditions, and sustainability practices, may have a more significant influence on ROA. Therefore, banks should focus not only on maintaining capital adequacy and liquidity levels, but also on improving overall performance, risk management, and operational efficiency to enhance profitability.

5.2. Limitations

This study has several limitations that need to be acknowledged, which also provide opportunities for future research. Therefore, future researchers are encouraged to consider the following suggestions. First, the independent variables used in this study are limited to the internal factors of the company, namely, the capital adequacy ratio and loan-to-deposit ratio. As a result, this study did not fully capture other potential factors that may influence bank profitability. Future research is expected to include additional variables, particularly from external or macroeconomic perspectives, such as credit risk (non-performing loans), interest rates, inflation, exchange rates, and other financial performance indicators. Including these variables may provide a more comprehensive understanding of the determinants of return on assets.

Second, the observation period in this study was relatively short, covering only three years from 2022 to 2024. A limited time frame may be insufficient to capture long-term trends and fluctuations in banking performance, especially in the context of economic changes and the implementation of green banking practices. Therefore, future research should use a longer observation period to obtain more robust, stable, and generalizable results. A longer time horizon would also allow researchers to better analyze the consistency of the relationships between variables over time.

Third, in addition, this study focuses only on banking companies listed on the Indonesia Exchange, which may limit the generalizability of the findings to other types of financial institutions and banks operating in different regulatory environments. Future studies should expand the sample by including non-listed banks or conducting comparative studies across countries to enrich the analysis and strengthen external validity.

Fourth, the measurement of green banking in this study relies on disclosures in annual and sustainability reports, which may be subject to reporting and differences in disclosure quality across banks. Future research is suggested to develop more comprehensive and standardized measurement approaches, such as using sustainability indices or third party ESG ratings, to improve the accuracy and consistency of the analysis.

By addressing these limitations, future research is expected to provide deeper insights and more comprehensive findings regarding the factors influencing bank profitability, particularly in the context of sustainable and green banking.

5.3. Suggestions

Future researchers should incorporate additional variables derived from external factors that may significantly influence banking profitability. The inclusion of external variables is important for providing a more comprehensive understanding of the determinants of bank performance, particularly in the context of dynamic economic conditions. These external variables may include credit risk, interest rates, inflation rates, exchange rates, and overall macroeconomic stability.

Credit risk, which is commonly measured using the non-performing loan ratio, plays a crucial role in determining bank profitability. A high level of non-performing loans indicates that a significant portion of the bank's credit portfolio is experiencing repayment problems, which can reduce interest income and increase the need for loss provisioning. The results show that higher credit risk negatively affects bank profitability. Therefore, incorporating non-performing loans as a variable in future studies can provide deeper insights into how management influences financial performance.

In addition, interest rates are a key macroeconomic factor that directly affects banking operations, and changes in interest rates can influence both the income and expenses of banks. This is particularly evident through lending rates and the cost of funds. An increase in interest rates may raise lending income but can also increase borrowing costs and reduce the credit demand. Conversely, lower interest rates may

stimulate lending but reduce the interest margins. Interest rate fluctuations have a complex and significant impact on bank profitability.

The inflation rate is another important macroeconomic indicator that reflects the overall economic environment. High inflation can reduce purchasing power and weaken borrowers' financial capacity, potentially increasing credit risk. In contrast, moderate inflation may support economic growth and improve lending opportunities. Therefore, including inflation as a variable can help explain how macroeconomic conditions affect banks' performance and profitability.

Furthermore, future research should extend the observation period to cover a longer timeframe. A longer observation period allows researchers to capture long-term trends, cyclical patterns, and structural changes in the banking industry. This is particularly important for understanding the impact of economic fluctuations and policy changes over time. Using a more extended period, the results of the analysis are expected to be more robust, reliable, and generalizable. By incorporating additional external variables and extending the research period, future studies are expected to provide more comprehensive and in-depth findings regarding the factors that influence bank profitability, especially in the context of sustainability practices.

Ethical Approval

Not Applicable

Informed Consent Statement

Not Applicable

Authors' Contributions

LDK conceptualized the study, designed the research framework, collected and curated the secondary data, conducted the panel data regression analysis using E-Views, and prepared the original draft of the manuscript. AMH contributed to the development of the theoretical framework, interpretation of the findings, and critical review of the manuscript. YN supported the analysis, strengthened the discussion of the results, and contributed to manuscript review and editing. All authors contributed to the revision of the manuscript and approved the final version.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Data Availability Statement

The data presented in this study are available on request from the corresponding author due to privacy reasons.

Funding

This study did not receive any external funding.

Notes on Contributors

Liyanita Dewi Kurnia
https://orcid.org/0009-0002-2712-871X
Liyanita Dewi Kurnia is affiliated with the Universitas Sains Indonesia, Bekasi.

Ade Manggala Hardianto
https://orcid.org/0000-0001-5934-413X
Ade Manggala Hardianto is affiliated with the Universitas Sains Indonesia, Bekasi.

Yuli Novitasari
https://orcid.org/0009-0007-6055-0695
Yuli Novitasari is affiliated with the Universitas Sains Indonesia, Bekasi.

REFERENCES

Astuti, R. P. (2022). Pengaruh CAR, FDR, NPF, dan BOPO terhadap profitabilitas perbankan syariah (The effect of CAR, FDR, NPF, and BOPO on Islamic banking profitability). *Jurnal Ilmiah Ekonomi Islam, 8*(3), 3213–3223. https://doi.org/10.29040/jiei.v8i3.6100

Batten, J. A., & Vo, X. V. (2019). Determinants of bank profitability: Evidence from Vietnam. *Emerging Markets Finance and Trade, 55*(6), 1417–1428. https://doi.org/10.1080/1540496X.2018.1524326

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications. https://books.google.com/books?id=335ZDwAAQBAJ

Deegan, C. (2002). Introduction: The legitimising effect of social and environmental disclosures: A theoretical foundation. *Accounting, Auditing & Accountability Journal, 15*(3), 282–311. https://doi.org/10.1108/09513570210435852

Dowling, J., & Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. *The Pacific Sociological Review, 18*(1), 122–136. https://doi.org/10.2307/1388226

Mustika, V. M., Putri, S. A., Wahyuni, S., & Sari, D. M. (2025). Green credit, bank social responsibility, dan kinerja keuangan perbankan di Indonesia (Green credit, bank social responsibility, and banking financial performance in Indonesia). *Jurnal Akuntansi dan Keuangan, 13*(1), 29–38. https://doi.org/10.29103/jak.v13i1.18170

Ozili, P. K. (2018). Banking stability determinants in Africa. *International Journal of Managerial Finance, 14*(4), 462–483. https://doi.org/10.1108/IJMF-01-2018-0007

Rahayu, D. S. (2020). *Pengaruh capital adequacy ratio (CAR) dan beban operasional pendapatan operasional (BOPO) terhadap return on asset (ROA) pada PT Bank BNI Syariah periode 2014–2018 (The effect of capital adequacy ratio [CAR] and operating expenses to operating income [BOPO] on return on asset [ROA] at PT Bank BNI Syariah for the 2014–2018 period)* [Undergraduate thesis, Institut Agama Islam Negeri Metro]. IAIN Metro Repository. https://repository.metrouniv.ac.id/id/eprint/3433/

Saeed, M., & Izzeldin, M. (2016). Examining the relationship between default risk and efficiency in Islamic and conventional banks. *Journal of Economic Behavior & Organization, 132*, 127–154. https://doi.org/10.1016/j.jebo.2014.02.014

Sekaran, U., & Bougie, R. (2020). *Research methods for business: A skill-building approach* (8th ed.). Wiley. https://books.google.com/books?id=ikI6EAAAQBAJ

Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review, 20*(3), 571–610. https://doi.org/10.5465/amr.1995.9508080331

Sugiyono. (2019). *Metode penelitian kuantitatif, kualitatif, dan R&D (Quantitative, qualitative, and R&D research methods)* (2nd ed.). Alfabeta.

Valdiansyah, R. H., & Murwaningsari, E. (2022). Earnings quality determinants in pre-corona crisis: Another insight from bank core capital categories. *Asian Journal of Accounting Research, 7*(3), 279–294. https://doi.org/10.1108/AJAR-08-2021-0134

Wangarry, M. V., Maramis, J. B., & Mangantar, M. (2023). Pengaruh capital adequacy ratio, non-performing loan, operating expenses on operating income, loan to deposit ratio terhadap firm value perbankan yang terdaftar di Bursa Efek Indonesia (The effect of capital adequacy ratio, non-performing loan, operating expenses on operating income, and loan to deposit ratio on the firm value of banking companies listed on the Indonesia Stock Exchange). *Jurnal EMBA: Jurnal Riset*

Ekonomi, Manajemen, Bisnis dan Akuntansi, 11(4), 1408–1417. https://doi.org/10.35794/emba.v11i4.52377