

The Influence of Credit Risk, Liquidity Risk, Operational Risk, Market Risk and Solvency Risk on Profitability

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ABSTRACT

This study aims to determine the extent of the influence of credit risk, liquidity risk, operational risk, market risk and solvency risk on the profitability of banks listed on the LQ45 index for the period 2018 - 2022. The type of research used is quantitative with causal associative methods. The data used is secondary data from the annual financial statements for the 2018-2022 fiscal year from the official website of the Indonesia Stock Exchange (IDX). The research sample was selected using purposive sampling technique so that 30 samples were obtained. The methods used include multiple regression analysis, t test, F test, and coefficient of determination. The results showed that X1_Non Performing Loan (NPL) had a negative and insignificant effect on Return On Asset (ROA), X2_Loan to Deposit Ratio (LDR) and X4_Net Interest Margin (NIM) had a significant positive effect on Return On Asset (ROA), X3_Operational Efficiency Ratio (OER) had a significant negative effect on Return On Asset (ROA), X5_Debt to Equity Ratio (DER) had a positive and insignificant effect on Return On Asset (ROA). And the five variables simultaneously have a significant effect on Return On Asset (ROA).

Keyword: Credit Risk, Liquidity Risk, Market Risk, Operational Risk, Banking Profitability, Risk Management.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui sejauh mana pengaruh risiko kredit, risiko likuiditas, risiko operasional, risiko pasar dan risiko solvabilitas terhadap profitabilitas perbankan yang terdaftar di indeks LQ45 periode 2018 – 2022. Jenis penelitian yang digunakan adalah kuantitatif dengan metode asosiatif kausal. Data yang digunakan adalah data sekunder dari laporan keuangan tahunan buku 2018 – 2022 dari situs resmi Bursa Efek Indonesia (BEI). Sampel penelitian dipilih dengan menggunakan teknik purposive sampling sehingga didapatkan 30 sampel. Metode yang digunakan meliputi analisis regresi berganda, uji t, uji F, dan koefisien determinasi. Hasil penelitian menunjukkan X1_Non Performing Loan (NPL) berpengaruh negatif tidak signifikan terhadap Return On Asset (ROA), X2_Loan to Deposit Ratio (LDR) dan X4_Net Interest Margin (NIM) berpengaruh positif signifikan terhadap Return On Asset (ROA), X3_Operational Efficiency Ratio (OER) berpengaruh negatif signifikan terhadap Return On Asset (ROA), X5_Debt to Equity Ratio (DER) berpengaruh positif tidak signifikan terhadap Return On Asset (ROA). Serta kelima variabel tersebut secara simultan berpengaruh signifikan terhadap Return On Asset (ROA).

Kata Kunci: Risiko Kredit, Risiko Likuiditas, Risiko Pasar, Risiko Operasional, Profitabilitas Perbankan, Manajemen Risiko.

Introduction

Banking plays an important role in a country's economy, especially in the process of intermediation or *financial intermediaries* between parties with excess funds and those who lack funds. (Dendawijaya, 2009a). Banks act as financial institutions that provide various financial services and products, such as financing and capital, which help individuals and businesses meet their needs, start new businesses, expand existing businesses or finance education. Banks certainly rely on public trust in their operational activities, so they need to pay attention and always evaluate the health level of their banks.

Bank health is critical in ensuring economic stability. Healthy banks have the ability to channel funds safely and efficiently, which in turn enables healthy economic growth. One indicator of bank health is reflected in the level of profitability. There are two types of profitability used to measure financial

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performance, namely Return on Equity (ROE) for general companies and Return on Asset (ROA) used for the banking financial industry. (Nur Kholivah et al., 2023). Profitable banks can invest available funds to support economic growth. These investments can be in the form of loans that benefit the community, such as financing small and medium enterprises, or investing in projects that support economic growth. A profitable bank also has the ability to better weather financial crises, can reduce the risk of loss, and ensure that funds disbursed can be guaranteed.

Banks are required to conduct a bank health level assessment based on Bank Indonesia Regulation (PBI) No.13/1/PBI/2011 concerning Health Level Assessment of Commercial Banks using the RGEC method (Risk Profile, Good Corporate Governance, Earning, Capital). In this method, Risk Profile is the most important component, the assessment of risk profile factors is an assessment of inherent risk and the quality of risk management implementation in bank operations. Credit risk, liquidity risk, operational risk, market risk, and solvency risk are interrelated in maintaining bank health. Credit risk refers to the possibility of loss due to the failure of debtors to fulfill their obligations, which may affect the bank's cash flow. Liquidity risk involves the bank's ability to meet short-term obligations without disrupting normal activities, which can be measured by ratios such as Loan to Deposit Ratio (LDR). Operational risk relates to inadequate and/or malfunctioning internal processes, human error, and system failure. Market risk involves the risk to balance sheet positions and administrative accounts, including derivative transactions, due to changes in market conditions. Solvency risk refers to the bank's ability to meet short-term obligations without incurring unacceptable costs.

The interrelationship between these risks is very important in managing risk and ensuring bank health, as these risks can affect each other and require integrated management to maintain bank financial stability. Especially for banks listed in LQ45 have bright business growth prospects and a good track record in Good Corporate Governance (GCG) and profitability, indicating good fundamentals. From an investment perspective, the banking sector in LQ45 is considered an attractive option for investors. This is because large banks in Indonesia often show stable performance and are able to provide attractive dividends (Utami, 2021). When foreign investors see good growth potential in the Indonesian banking sector, they tend to invest. Research by Kartika (2020) emphasizes that investment in the banking sector not only provides profit potential, but also contributes to economic growth by increasing banks' ability to provide credit.

Banks listed in the LQ45 index in Indonesia are also closely linked to the global economy, where the performance and stability of the sector is affected by various external factors such as international market fluctuations, global interest rates, and macroeconomic conditions in major countries. Research by Tan & Wang (2023) shows that banks in the LQ45, such as Bank Central Asia and Bank Mandiri, contribute significantly to domestic economic growth through the financing they

provide, which in turn supports people's purchasing power and investment. Moreover, global economic uncertainty, as seen during the COVID-19 pandemic, can affect the volatility of stocks in LQ45 and create systemic risk that can spill over into the domestic financial market (Wójcik & Ioannou, 2020). Thus, the stability of the banking sector in LQ45 is not only important for the Indonesian economy, but also plays a role in maintaining the health of the global economy, given the increasing interdependence between financial markets around the world (Berawi, 2022). However, it is necessary to know the risks in banking given that LQ45 stocks are not free from market fluctuations and economic turmoil that can affect their performance.

Research results Nur Kholivah et al. (2023) shows that the variable Operational Efficiency Ratio (OER), Net Interest Margin (NIM) partially has a negative and insignificant effect on Return On Asset (ROA), while the Non Performing Loan (NPL) variable partially has a positive and significant effect on Return On Asset (ROA), the Loan to Deposit Ratio (LDR) variable partially has a negative and significant effect on Return On Asset (ROA). Other results are shown by Sante et al. (2021) which shows that partially Non Performing Loan (NPL) and Loan to Deposit Ratio (LDR) have no significant effect on Return On Asset (ROA), partially Operational Efficiency Ratio (OER) have a significant effect on Return On Asset (ROA). Research Korompis et al. (2020) shows that simultaneously Net Interest Margin (NIM), Non Performing Loan (NPL) and Loan to Deposit Ratio (LDR) have a significant effect on Return On Asset (ROA).

Based on the description above, there are still differences and inconsistencies in research results. The purpose of this study is to examine the risks that affect banking profitability, especially how the variables described above affect the profitability of banking companies listed in LQ45 for the period 2018 - 2022. This research is expected to add insight and contribute to investors and stakeholders as a consideration in making decisions and developing effective strategies.

Literature Review

Profitability

Profitability is an indicator that measures how efficient the company is in converting assets into income. (Kariyono, 2017). One of the profitability ratios used for financial performance is Return On Asset (ROA). ROA is calculated by dividing operating profit by total assets. This indicator helps assess how well the company manages its assets to achieve profit. A high ROA indicates that the company can generate significant profits from its assets, while a low ROA indicates that the company is less efficient in managing its assets. Based on Bank Indonesia Regulation No. 13/1/PBI/2011, the best standard of ROA is more than 1.5%.

Credit Risk

Credit risk, often measured by Non Performing Loan (NPL), is the uncertainty of a customer's ability to fulfill their obligations. (Hardanto, 2006). NPL

describes the percentage of loans that cannot be paid by debtors, which can be caused by various factors such as default, inability to make payments and the inability of debtors to complete their obligations in a timely manner. The higher the NPL, the greater the credit risk experienced by the bank, which can adversely affect the financial health of the bank. Based on Bank Indonesia Regulation No. 15/2/PBI/2013, net NPLs must be less than 5%.

Liquidity Risk

Liquidity risk, which is often measured by the Loan to Deposit Ratio (LDR), is the inability of a company to fulfill its obligations which has an impact on its financial condition. (Rustam, 2017a). Liquidity risk can occur because companies are unable to sell their assets at normal prices due to lack of purchasing power. To manage liquidity risk, banks should measure with indicators such as LDR and take actions to reduce the risk, such as by improving cash flow management, obtaining better financing, and developing products and services that are more responsive to customer needs. Based on Bank Indonesia Regulation No. 15/15/PBI/2013, the minimum LDR for banks is 78% and the maximum is 92%.

Operational Risk

Operational risk, which is usually measured through the ratio of Operational Efficiency Ratio (OER), reflects management's efficiency in controlling operating costs relative to the revenue generated. (Veithzal, 2013). OER measures the extent to which operating expenses can be controlled in an effort to maximize profits. A high OER ratio may indicate problems in cost management, which may be caused by various factors such as process inefficiencies, obsolete technology systems, or suboptimal human resource management. External factors such as market fluctuations and regulatory changes can also affect OER. Based on Bank Indonesia Regulation No. 15/15/PBI/2013, the ideal OER value is 50% - 70% and a maximum of 85%.

Market Risk

Market risk in the context of banking is often measured using Net Interest Margin (NIM), which is the difference between the interest income earned by banks from loans and the interest paid to depositors. (Taswan, 2009). NIM reflects the bank's ability to manage market risk associated with fluctuations in interest rates and financial market conditions. Banks with effective market risk management tend to have more stable NIM, which in turn contributes to profitability and financial stability. (Korompis et al., 2020). In addition, factors such as portfolio diversification, adaptive interest rate policies, and financial product innovation also play an important role in mitigating market risk and optimizing NIM. Based on Bank Indonesia Regulation No. 15/12/PBI/2013, a healthy bank NIM value is above 2%.

Solvency Risk

Solvency risk is often measured using the Debt to Equity Ratio (DER), which shows the proportion between the company's total debt and equity. DER is an indicator that measures the extent to which a company uses debt to finance its assets and its ability to meet long-term obligations. (Kasmir, 2019). DER is influenced by factors such as company financial policies, market conditions, interest rates, and income stability. High DER can increase the risk of insolvency, especially during periods of economic uncertainty, due to high interest expenses and potential difficulties in meeting debt obligations (Kurniawati et al., 2019). (Kurniawati et al., 2018).

Hypothesis Development

Effect of Credit Risk on Profitability

According to Pandia (2012) credit risk is the risk of losing money if the borrower is unable or unwilling to repay the loaned funds on the due date. The level of credit risk can be proxied by one of them with the Non-Performing Loan (NPL) ratio, because NPL can be used to measure the extent to which existing non-performing loans can be met with productive assets owned by a bank. One of the dangers that arise as a result of the increasing complexity of banking activities is the emergence of more NPLs, where larger NPLs will increase the cost of provisioning for productive assets and other costs, which in turn will result in a decrease in the bank's financial performance (Kasmir, 2010).

Research conducted by Korompis et al. (2020) stated that credit risk has a significant influence and has a negative relationship with profitability. High credit risk can increase the possibility of bad debts, which in turn requires a larger loan loss reserve. This increase in reserves reduces the net income that banks can earn. In addition, banks facing high credit risk tend to increase lending rates to compensate for the greater risk, which may decrease loan demand and potentially reduce net interest income. Furthermore, ineffective credit risk management may lead to increased operating costs related to risk monitoring and control, as well as additional expenses for bad debt collection.

H1: Credit Risk has a significant effect on Profitability.

Effect of Liquidity Risk on Profitability

Liquidity ratio is a ratio that shows how well a company can fulfill short-term debt or short-term obligations (Hanafi, 2012). Loan to Deposit Ratio (LDR) as a financial ratio that can be used to measure the bank's ability to pay short-term debt. Cashmere (2019) states that the Loan to Deposit Ratio (LDR) is a ratio used to measure how much credit has been given. This ratio is calculated by comparing public funds and capital used. The higher the LDR level, the more credit the bank can provide.

Research conducted by Mambu et al. (2022) stated that liquidity risk has a significant influence and has a positive relationship with profitability. A higher

LDR reflects a greater proportion of loans compared to deposits, which indicates that the bank is effectively using available funds to generate higher interest income. By providing more loans, banks can increase net interest income, which in turn can increase ROA. This indicates that the bank is able to manage liquidity risk efficiently and take advantage of market opportunities to maximize profitability. In addition, a high LDR may also reflect the bank's confidence in the quality of its loan portfolio and its ability to manage the associated credit risk.

H2: Liquidity Risk has a significant effect on Profitability.

Effect of Operational Risk on Profitability

Operational risk can be defined as the loss or inadequacy of internal processes, human resources, and systems or external events (Idroes, 2011). The level of credit risk can be proxied by the Operational Efficiency Ratio (OER) ratio, because OER can measure how efficient and effective the bank is in conducting operational activities. The OER ratio is the ratio between operating expenses and operating income. The lower the OER ratio, the more efficient the bank (Dendawijaya, 2009). A high OER level indicates that the bank is not running its operations efficiently, which results in increased operational risk (Nurnaningsih, 2012). According to Fahmi (2016), operational risk usually comes from internal company problems. This problem occurs because the internal company does not have a good management control system.

Research conducted Nur Kholivah et al. (2023) stated that operational risk has a significant influence and has a negative relationship to profitability. Higher OER reflects low operational efficiency, where high operating costs are not proportional to the operating income generated. When banks face greater operating costs to earn the same or lower revenues, this will reduce profit margins and in turn lower ROA. This indicates that ineffective operational risk management may hinder the bank's ability to achieve optimal profitability.

H3: Operational Risk has a significant effect on Profitability.

Effect of Market Risk on Profitability

Rustam (2017) states that market risk is the risk posed by changes in market prices on the statement of financial position and administrative accounts. Changes in overall market conditions include the risk of changes in option prices. Net Interest Margin (NIM) is an indicator of market risk research. NIM is used to measure the bank's ability to earn net interest income through the placement of available assets. (Mambu et al., 2022). A higher NIM indicates the bank's ability to earn greater net interest income from its productive assets, so that the high net interest income will minimize the potential financial risk of problem banks.

Research conducted Permatasari, Y., Agustina, N., & Jatmika (2024) stated that market risk has a significant influence and has a positive relationship with profitability. Higher interest income compared to interest costs indicates that the bank is able to manage its assets and liabilities effectively in the face of interest rate

fluctuations and changing market conditions. Thus, a high NIM reflects the bank's efficiency in utilizing interest *spreads*, which in turn will increase ROA. Furthermore, a high NIM may reflect the bank's success in its loan and deposit pricing strategy, as well as the ability to adjust its asset portfolio according to market conditions. Banks that have a high NIM are usually able to compensate for market risk by earning sufficient income from interest rate differentials, thereby increasing overall profitability. In addition, a high NIM may also indicate that the bank has good market risk management, which is able to navigate through market volatility and maintain earnings stability.

H4: Market Risk has a significant effect on Profitability.

Effect of Solvency Risk on Profitability

According to Hery (2015) The solvency ratio or leverage ratio is the ratio used to calculate the extent to which the company's assets are financed with debt. In other words, this ratio shows how much debt burden the company must bear to fulfill its assets. The level of debt usage can be calculated using DER against the company's equity (Darmadji & Fakhruddin, n.d.). Companies with a high Debt to Equity Ratio (DER) have a high risk due to the high level of debt. Based on signaling theory, high DER is a bad signal for investors (Astutik et al., 2015).. According to them, since the funds used by the company mostly come from debt, a high DER indicates high risk. A lower DER value indicates better company performance due to lower risk and greater dependence of the company's capital on external parties. A higher DER value indicates a greater burden on the company.

Research conducted Ardhefani et al. (2021) stated that solvency risk has a significant effect and has a positive relationship with profitability. Higher DER indicates greater use of debt to fund the bank's productive assets. By using debt efficiently, banks can increase their financial *leverage*, which can increase the potential income from debt-financed investments. If the income generated from debt-financed assets exceeds the cost of debt interest, this will result in an increase in profitability. In addition, a high DER may reflect the ability of the bank's management to optimize its capital structure by utilizing debt to increase asset and revenue growth. Banks that are able to manage debt well and invest borrowed funds in profitable projects can increase profit margins and operational efficiency.

H5: Solvency risk has a significant effect on profitability.

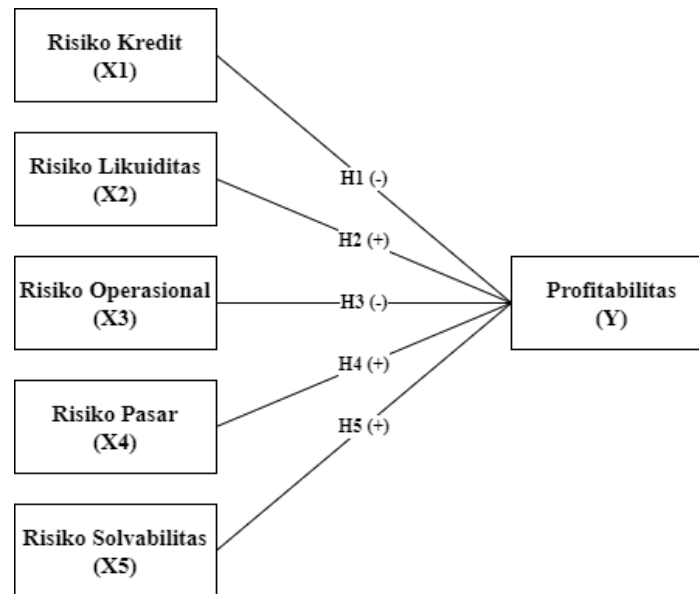


Figure 1. Research Model
 Source: Data processed, 2024

Research Methods

The research used is quantitative with a causal associative method. According to Sugiyono (2018) causal associative research is research that aims to determine the relationship between two or more variables. This research was conducted by taking secondary data from banks listed in LQ45 for the period 2018 - 2022 and has all the variables selected by the researcher, namely Return On Asset (ROA) Non Performing Loan (NPL), Loan to Deposit Ratio (LDR), Operational Efficiency Ratio (OER), Net Interest Margin (NIM) and Debt to Equity Ratio (DER). Data collection is done by collecting complete annual financial report data for the 2018 - 2022 fiscal year obtained from the official website of the Indonesia Stock Exchange (IDX). The sampling method used is Purposive Sampling, which is a way of sampling by determining the characteristics that are in accordance with the objectives. The steps and sample selection criteria in this study are as follows: (1) Selecting banks listed on the LQ45 Index during the 2018-2022 period; (2) Selecting banks that have published audited financial reports during the 2018-2022 period; (3) Selecting banks that are consistently in the LQ45 Index for five consecutive years, namely the 2018-2022 period and have a stable ROA. So that the number of samples used in this study was 30 samples, which will be observed for five consecutive years with 150 observations. The analysis technique uses the classic assumption test (normality test, autocorrelation test, multicollinearity test, heteroscedasticity test), multiple regression analysis (F-Test and T-Test) and the coefficient of determination. The entire SPSS Version 27.0 software program was used for Windows to complete this data analysis.

Results And Discussion

Descriptive Statistics Test

Table 1. Descriptive Statistics Test Results

	N	Descriptive Statistics			
		Minimum	Maximum	Mean	Std. Deviation
NPL	30	0.26	4.97	1.12100	1.02314
LDR	30	62.00	113.50	84.09967	11.04375
OER	30	46.50	98.12	74.94200	13.60396
NIM	30	3.06	7.45	5.35533	1.04035
DER	30	2.17	16.08	6.33967	3.58762
ROA	30	0.13	3.76	2.12433	1.11052
Valid N (listwise)	30				

Source: Data processed by SPSS 27, 2024

Based on the results of descriptive statistical tests, the average value of Return On Asset (ROA) is 2.12433 and has a standard deviation of 1.11052. The Non Performing Loan (NPL) variable obtained an average value of 1.12100 and has a standard deviation of 1.02314. The Loan to Deposit Ratio (LDR) variable obtained an average value of 84.09967 and had a standard deviation of 11.04375. The Operational Efficiency Ratio (OER) variable obtained an average value of 74.94200 and had a standard deviation of 13.60396. The Net Interest Margin (NIM) variable obtained an average value of 5.35533 and had a standard deviation of 1.04035. The Debt to Equity Ratio (DER) variable obtained an average value of 6.33967 and had a standard deviation of 3.58762.

Normality Test

The Normality Test is used to test whether the data is normally distributed or not. A good regression model is a regression model that has normal or near normal distribution, so it is feasible to do statistical testing.

Table 2. Normality Test Results

Kolmogorov Smirnov	Shapiro-Wilk	Description
0.200	0.463	The significance value obtained Kolmogorov Smirnov and Shapiro-Wilk numbers are 0.2 and 0.463 respectively, which means the value is more than 0.05, which indicates that the residual data is normally distributed.

Source: Data processed by SPSS 27, 2024

Autocorrelation Test

Autocorrelation test is used to find out the correlation between members of one observation and other observations at different times. The autocorrelation test helps detect dependence between observations that can cause parameter estimates to be biased and model efficiency to decrease. The method used to test for autocorrelation is the Durbin-Watson test.

Table 3. Autocorrelation Test Results

Durbin-Watson	Description
1.633	The Durbin-Watson value of 1.633 while the dl value is 1.071 and the du value is 1.833 resulting in a 4-du value of 2.167 because the Durbin-Watson value of 1.633 is in the dl and du area, there is no conclusion or $dl (1.071) \leq d (1.633) \leq du (1.833)$ which indicates the research can continue.

Source: Data processed by SPSS 27, 2024

Heteroscedasticity Test

Heteroscedasticity test is used to determine whether the variance of the residuals is not the same for all observations, which causes the estimator to be inefficient and the coefficient of determination will be very high. This study was tested with the park test, which aims to detect the occurrence of heteroscedasticity in errors carried out by testing the regression between the independent variable and the error.

Table 4. Heteroscedasticity Test Results

Model	Sig.	Keterangan
NPL	0.094	After the park test, the value in the sig table is greater than 0.05, which means that there is no heteroscedasticity in the regression model used.
LDR	0.986	
OER	0.053	
NIM	0.978	
DER	0.296	

Source: Data processed by SPSS 27, 2024

Multicollinearity Test

Multicollinearity test is used to test whether there is a correlation between independent variables. Because a good regression model is aimed at the test results. In order to determine whether there is multicollinearity in the regression model, it can be seen with the Tolerance Value (TOL) or Variance Inflation Factor (VIF). If the TOL value is close to 1 or the VIF amount is less than 10, the model is not exposed to multicollinearity.

Table 5. Multicollinearity Test Results

Model	Tolerance	VIF	Keterangan
NPL	0.49	2.043	

LDR	0.569	1.756	There is no sign of multicollinearity in this regression model as tolerance values below 0.10 indicate that there is no close relationship between the independent variables. In addition, VIF values greater than one but less than 10 also indicate that there is no multicollinearity between the independent variables.
OER	0.406	2.463	
NIM	0.442	2.265	
DER	0.366	2.730	

Source: Data processed by SPSS 27, 2024

Multiple Linear Regression Analysis

After the classical assumption test was carried out, no symptoms of normality, autocorrelation, heteroscedasticity and multicollinearity were found. So that it is eligible to test the effect of variables carried out by multiple linear analysis or multiple regression analysis.

Table 6. Multiple Linear Regression Analysis Results

Model	Coefficients ^a			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	2.829	0.591		4.785	0.000
NPL	-0.047	0.062	-0.044	-0.766	0.451
LDR	0.025	0.005	0.252	4.765	0.000
OER	-0.070	0.005	-0.852	-13.590	0.000
NIM	0.429	0.064	0.401	6.679	0.000
DER	0.021	0.020	0.068	1.027	0.315

Source: Data processed by SPSS 27, 2024

Based on the results from Table 6, the regression equation is written as follows:

$$ROA = 2.829 - 0.047 \text{ NPL} + 0.025 \text{ LDR} - 0.070 \text{ OER} + 0.429 \text{ NIM} + 0.021 \text{ DER}$$

This regression model is meaningful as follows:

1. The constant obtained a value of 2.829 which means that when the independent variable is zero, the ROA is 2.829.
2. The regression coefficient of the Non Performing Loan (NPL) variable obtained a value of -0.047, which means that when NPL increases by 1 unit, it will result in a decrease in ROA by 0.047.
3. The regression coefficient of the Loan to Deposit Ratio (LDR) variable obtained a value of 0.025, which means that when LDR increases by 1 unit, it will result in an increase in ROA by 0.025 units.
4. The regression coefficient of the Operational Efficiency Ratio (OER) variable obtained a value of -0.070, which means that when OER increases by 1 unit, it will result in a decrease in ROA by 0.070 units.
5. The regression coefficient of the Net Interest Margin (NIM) variable obtained a value of 0.429, which means that when NIM increases by 1 unit, it will result in an increase in ROA of 0.429 units.

6. The regression coefficient of the Debt to Equity Ratio (DER) variable obtained a value of 0.021, which means that an increase of 1 unit of DER will result in an increase in ROA by 0.021 units.

Test Coefficient of Determination (R^2)

The Coefficient of Determination (R^2) test is used to measure the proportion of variability in the dependent variable that can be explained by the independent variables in the regression model. A higher R^2 value indicates that the model has a better ability to explain variations in the data, giving an indication of how well the model fits the observed data.

Table 7. Test Results of the Coefficient of Determination (R^2)

R Square	Keterangan
0.962	The R Square value is obtained at 0.962 or 92%, so it can be interpreted that the variables Non Performing Loan (NPL), Loan to Deposit Ratio (LDR), Operational Efficiency Ratio (OER), Net Interest Margin (NIM) and Debt to Equity Ratio (DER) affect Return On Asset (ROA) by 92% while the remaining 8% is influenced by other variables outside this study.

Source: Data processed by SPSS 27, 2024

Simultaneous Significance Test (F Test)

The Simultaneous Significance Test (F Test) is used to assess whether the regression model as a whole is significant in explaining data variability compared to a model without predictors. This test compares the variance explained by the model with the unexplained variance, so as to determine whether at least one of the independent variables has a significant influence on the dependent variable.

Table 8. Simultaneous Significance Test Results (F Test)

F hitung	Sig.	Keterangan
120.545	0.001	The calculated F value obtained is 120.545 with a significance value of 0.001, so the F-count value of 120.545 is greater than the F-table of 2.602 or $120.545 > 2.602$ and the significance value is less than 0.05 or $0.001 < 0.05$ so it can be concluded that the variables Non Performing Loan (NPL), Loan to Deposit Ratio (LDR), Operational Efficiency Ratio (OER), Net Interest Margin (NIM) and Debt to Equity Ratio (DER) simultaneously have a significant effect on Return On Asset (ROA).

Source: Data processed by SPSS 27, 2024

Hypothesis Test

Hypothesis testing is used to determine whether the results of an analysis of sample data support or reject the null hypothesis. These tests help evaluate claims

or assumptions about the population based on sample data, using test statistics to inform the decision.

1. The Non Performing Loan (NPL) variable obtained a significance value of $0.451 > 0.05$, which means that Non Performing Loan (NPL) partially has no effect on Return On Asset (ROA).
2. The Loan to Deposit Ratio (LDR) variable obtained a significance value of $0.000 > 0.05$, which means that the Loan to Deposit Ratio (LDR) partially has a positive effect on Return On Asset (ROA).
3. The Operational Efficiency Ratio (OER) variable obtained a significance value of $0.000 < 0.05$, which means that Operational Efficiency Ratio (OER) partially has a negative effect on Return On Asset (ROA).
4. The Net Interest Margin (NIM) variable obtained a significance value of $0.000 < 0.05$, which means that Net Interest Margin (NIM) partially has a positive effect on Return On Asset (ROA).
5. The Debt to Equity Ratio (DER) variable obtained a significance value of $0.315 > 0.05$, which means that the Debt to Equity Ratio (DER) partially has no effect on Return On Asset (ROA).

DISCUSSION

Effect of Non Performing Loan (NPL) on Profitability (ROA)

Based on the results of multiple linear regression analysis, it shows that credit risk (NPL) partially has no significant effect on profitability (ROA) in banking companies listed on LQ45 for the period 2018-2022. This is due to the bank's ability to manage non-performing loans through loss reserves or other effective risk management strategies, so that the negative impact of NPLs on profitability can be minimized. Therefore, although NPL remains important as an indicator of credit health, the focus on improving ROA should also consider other factors that more directly affect asset performance. The results of this study are supported by research conducted by Sante et al. (2021), Intan Sari Novia Anggraini et al. (2022), and Fadriyaturrohman & Manda (2022) which states that Non Performing Loan (NPL) has no significant effect on Return On Asset (ROA).

The Effect of Loan to Deposit Ratio (LDR) on Profitability (ROA)

Based on the results of multiple linear regression analysis, it shows that liquidity risk (LDR) partially has a positive and significant effect on profitability (ROA) in banking companies listed in LQ45 for the period 2018-2022. This finding indicates that an increase in LDR which reflects the proportion of loans given to total deposits received can increase the profitability of bank assets. A higher LDR ratio indicates the effectiveness of the bank in channeling funds received from deposits into productive loans, which in turn can generate higher interest income and increase ROA. Therefore, effective LDR management is important for banks to maximize the use of their funds to increase overall asset profitability. The results of this study are supported by research conducted by Mambu et al. (2022),

Ekananda et al. (2016) and Dewi (2018) which states that the Loan to Deposit Ratio (LDR) has a positive and significant effect on Return On Asset (ROA).

Effect of Operating Expenses on Operating Income (OER) on Profitability (ROA)

Based on the results of multiple linear regression analysis, it shows that operational risk (OER) partially has a negative and significant effect on profitability (ROA) in banking companies listed in LQ45 for the period 2018-2022. This finding indicates that an increase in the OER ratio, which reflects high operating costs relative to operating income, significantly reduces the profitability of bank assets. In other words, poor operational efficiency is characterized by high OER and will have a direct impact on decreasing ROA. Therefore, to increase ROA banks need to focus on managing and controlling operating costs effectively, so that the OER ratio can be reduced and operational efficiency can be improved. The results of this study are supported by research conducted by Permatasari, Y., Agustina, N., & Jatmika (2024), Yuliana & Listari (2021) and Maulana et al. (2021) which states that Operational Efficiency Ratio (OER) has a negative and significant effect on Return On Asset (ROA).

Effect of Net Interest Margin (NIM) on Profitability (ROA)

Based on the results of multiple linear regression analysis, it shows that market risk (NIM) partially has a positive and significant effect on profitability (ROA) in banking companies listed in LQ45 for the period 2018-2022. This finding indicates that an increase in NIM, which reflects the difference between interest income earned and interest expense paid relative to productive assets, significantly increases the profitability of bank assets. In other words, the higher the NIM, the greater the contribution of net interest income to ROA. This suggests that banks that are able to manage their net interest margin effectively tend to have better and more profitable asset performance. Therefore, focusing on NIM optimization through careful interest rate management and appropriate lending strategies is key to improving ROA. The results of this study are supported by research conducted by Korompis et al. (2020), Indrawan & Kaniawati Dewi (2020) and Setyarini (2020) which states that Net Interest Margin (NIM) has a positive and significant effect on Return On Asset (ROA).

Effect of Debt to Equity Ratio (DER) on Profitability (ROA)

Based on the results of multiple linear regression analysis, it shows that solvency risk (DER) partially has no significant effect on profitability (ROA) in banking companies listed in LQ45 for the period 2018-2022. This finding indicates that variations in the DER ratio, which reflects the proportion between total debt and equity, have no significant direct impact on the profitability of bank assets as measured by ROA. This could be due to various other factors that are more dominant in influencing asset performance, such as management quality, revenue

structure, and market conditions. While DER remains important for assessing capital structure and financial risk, this study suggests that other factors may be more decisive in influencing ROA. Therefore, efforts to improve ROA should also consider various other aspects of bank operations and management. The results of this study are supported by research conducted by Yanti, S., Suryani, S., & Jajuli (2024), Punagi (2022) and Sudiantini et al. (2023) which states that Debt to Equity Ratio (DER) has no significant effect on Return On Asset (ROA).

Conclusion

Based on the results of the research that has been done, it can be concluded that the Non Performing Loan (NPL) variable partially has a negative and insignificant effect on Return On Asset (ROA), the Loan to Deposit Ratio (LDR) variable partially has a positive and significant effect on Return On Asset (ROA), the Operating Expense to Operating Income (OER) variable partially has a negative and significant effect on Return On Asset (ROA), Net Interest Margin (NIM) variable partially has a positive and significant effect on Return On Asset (ROA), Debt to Equity Ratio (DER) variable partially has a positive and insignificant effect on Return On Asset (ROA), and Non Performing Loan (NPL), Loan to Deposit Ratio (LDR), Operational Efficiency Ratio (OER), Net Interest Margin (NIM) and Debt to Equity Ratio (DER) variables simultaneously have a significant effect on Return On Asset (ROA).

The results of this study confirm the applicability of statistical theory in understanding the relationship between these variables and ROA. The findings imply that while certain variables, such as LDR, BOPO, and NIM, significantly influence ROA, other variables like NPL and DER show insignificant effects. This suggests that factors not captured in the research may also play a role in influencing ROA, potentially introducing confounding variables that could affect the observed relationships. Therefore, the research highlights that while some financial ratios significantly impact ROA, further analysis may be required to fully understand the dynamics involved.

Limitation

The limitations in this study include several aspects, including focusing on five types of risk, namely Credit Risk, Liquidity Risk, Operational Risk, Market Risk, and Solvency Risk which are tested for their influence on Profitability, without considering other external factors that may also affect the results. This study is limited to data on banking companies listed in LQ45 in the period 2018 to 2022, so the results cannot be generalized to all sectors or a longer period of time. In addition, the indicators used to measure each risk, although widely used in previous literature, may not cover all dimensions of risk. These limitations need to be considered in interpreting the results and in further research development efforts, where other unexamined factors may play a role in influencing profitability.

Suggestions

For management, it is recommended that in taking various banking policies, various risks faced by banks such as liquidity risk, operational risk and market risk which can also affect banking profitability. Management also needs to maintain the value of financial ratios in accordance with Bank Indonesia's provisions to become a healthy bank in its management. For further researchers it is recommended to add other bank samples listed on the Indonesia Stock Exchange (IDX), as well as add other financial ratio variables such as Capital Adequacy Ratio (CAR) and Interest Rate Risk (IRR).

Implication

The practical implications of the results of this study indicate that companies need to focus more on managing factors that significantly affect profitability, namely Loan to Deposit Ratio (LDR) and Net Interest Margin (NIM), both of which have a positive effect on Return On Asset (ROA). The company should increase LDR by maintaining a good balance between loans and deposits to support more optimal interest income, and pay attention to NIM which shows how efficient the company is in generating profits from the difference in interest. On the other hand, Operational Efficiency Ratio (OER) which has a significant negative effect on ROA indicates that companies should reduce inefficient operating costs to increase profitability. Although Non Performing Loan (NPL) and Debt to Equity Ratio (DER) have an effect on ROA, both do not show a significant effect partially, companies still need to monitor loan quality (NPL) and maintain solvency ratios (DER) so as not to burden long-term financial conditions. Overall, this study suggests that companies should pay attention to these five variables in their financial strategy and risk management to achieve better profitability, given their significant simultaneous effect on ROA. Management needs to design policies that optimize the performance of each of these variables, such as reducing operational costs, increasing efficiency in asset and liability management, and ensuring long-term financial stability, to maintain the sustainability of the company's profitability and financial stability.

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