

## A CORRELATION BETWEEN NON-PERFORMING LOANS (NPL) AND BANK PROFITABILITY: A CASE STUDY OF PT BANK RAKYAT INDONESIA (PERSERO) TBK, 2020–2024

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**Abstract** – This study aims to examine the correlation effect of Non-Performing Loans (NPL), NPL Ratio, Loans, and Credit on corporate profitability. The data utilized in this research is sourced from the annual financial reports of one of Indonesia's state-owned banks, PT Bank Rakyat Indonesia (Persero) Tbk, covering the period from 2020 to 2024. The research employs a quantitative associative method, with data analysis conducted through a simple linear regression model. The findings reveal that the factors of Non-Performing Loans (NPL), NPL Ratio, Loans, and Credit demonstrate a positive linear relationship with the company's profitability. However, the regression analysis indicates that the influence of Loans and NPL as dependent variables on BRI's profitability, as the independent variable, is not statistically significant. This is attributed to BRI's substantial revenue streams and other contributing factors that enhance and optimize the bank's profitability.

**Keywords:** Non-Performing Loans, Profitability, Loans

### I. INTRODUCTION

The banking industry is one of the strategic sectors that plays a vital role in driving national economic growth. One of its primary functions is to distribute funds in the form of loans to other industries and the general public. The establishment of the banking financial industry as a credit provider to society is a crucial component in the development of a national economic system. Naturally, in conducting its business operations, the industry is bound by banking regulations (Nurwulan, Siregar, & Fania, 2020). The performance of national banking companies is expected to improve year over year, as the growth in bank profits is anticipated to stimulate credit distribution (Sorongan, 2020).

The Government of Indonesia, through the Ministry of State-Owned Enterprises, plays an essential role in the banking industry. Currently, the Ministry holds more than 50% ownership in several banks commonly known as Himbara (Himpunan Bank Milik Negara). Himbara consists of major banks in Indonesia, namely PT Bank Rakyat Indonesia (Persero) Tbk (BRI), PT Bank Negara Indonesia (Persero) Tbk (BNI), PT Bank Mandiri (Persero) Tbk, and PT Bank Tabungan Negara (Persero) Tbk (BTN). These banks are among the largest asset holders in Indonesia and are primarily financed by the state (Nofiar & Chasanah, 2023).

One of the fastest-growing Himbara banks is PT Bank Rakyat Indonesia (Persero) Tbk, commonly known as Bank BRI. BRI is one of the largest banks in Indonesia, operating under both conventional and sharia systems. Established on December 16, 1895, in Purwokerto, BRI has remained committed to serving micro and small-scale communities by providing credit to small and medium-sized entrepreneurs. Effective banking management and the availability of professional resources have made BRI one of the most profitable banks with the largest asset base (Yuliana, 2020).

One of the key indicators used to assess a bank's performance is the Non-Performing Loan (NPL) ratio. NPL refers to the ratio of total credit disbursed to the level of collectability assessed by the bank. This ratio can be influenced by internal factors within the bank, internal factors of the debtor, as well as external non-bank and non-debtor factors (Dwihandayani, 2017). Lending is a core activity in the banking industry, targeting individuals, institutions, and corporations. Banks generate profit primarily from interest earned on loans. Hence, a high NPL can negatively impact a bank's profitability, as unpaid interest and installments reduce revenue.

This study aims to analyze the correlation between Non-Performing Loans (NPL) and profit at PT Bank Rakyat Indonesia (Persero) Tbk using data from 2020 to 2024. The results of this study are expected to provide insights into how high or low levels of NPL affect the bank's profitability. This study aims to contribute to the understanding of the impact of Non-Performing Loans (NPLs) on the profitability of the banking industry, while also emphasizing the critical importance of effective NPL management in ensuring the long-term sustainability of banking operations.

## II. LITERATURE REVIEW

### 2.1 Profitability

Profitability is a company's ability to generate profit. Kasmir (2008) stated that a bank's profitability ratio is a tool to analyze or measure the level of business efficiency. The higher the profitability level, the more capable a company is to survive and compete in the industry. A company can gain profit by increasing sales volume and reducing costs. In the banking sector, sales come in the form of credit. The higher the credit distribution, the greater the potential profit (Natalia, 2017). This theory is consistent with Arullia (2018), who stated that factors affecting bank profitability include credit distribution volume and financial ratios. The bank's function in credit distribution also gives rise to credit risk, which is the risk of default in loan repayments by debtors. Credit risk is reflected in the Non-Performing Loan (NPL) ratio (Anggreni, 2014). As credit distribution increases, credit risk tends to rise.

### 2.2 Non-Performing Loan

Non-Performing Loans (NPL) are problematic loans where the debtor cannot meet payment obligations according to the original agreement. These include substandard loans, doubtful loans, and bad debts. According to Bank Indonesia Circular Letter No. 12/11/DPNP dated March 31, 2020, NPL is calculated based on the ratio of non-performing loans to total loans. An NPL ratio is considered healthy when it is below 5%. A higher NPL indicates that the bank's credit management is unprofessional (Riyadi, 2006). The increase in non-performing loans results in a greater need for loan loss provisions, which can erode the bank's profit because of losses in its operations.

The causes of NPL can be seen from two aspects: the bank's side in conducting credit analysis and the debtor's side for not fulfilling payment obligations—either intentionally or unintentionally (Kasmir, 2013). Louzis et al. (2012), as cited by Hakim (2017), also stated that one of the causes of NPL is macroeconomic factors. During an economic recession, there are indications that NPLs increase due to reduced consumption and investment activities, which lower the debtor's quality.

According to Zattira (2016), if a bank can reduce its NPL ratio below 5%, the potential profit will be greater. A low NPL ratio allows the banking industry to save more on provisions for bad loans. Previous research by Khoiriyah (2022) also found that NPL negatively affects ROA. This means that an increase in NPL causes a decrease in ROA, reducing the company's profitability. This indicates that the management of non-performing loans is crucial to maintaining the financial performance of banks.

### III. METHODS

#### 3.1 Research Type

This study adopts a quantitative associative approach to examine the relationship between credit risk and bank profitability indicators using data from PT Bank Rakyat Indonesia (Persero) from 2020 to 2024. The associative quantitative method proves particularly effective in financial research as it enables causal relationship analysis between banking performance variables (Wibowo & Suryanto, 2020). The analysis focuses on the correlation between the independent variable (Non-Performing Loans/NPL and Loans) bank profitability as a dependent variable utilizing annual financial reports of PT Bank Rakyat Indonesia (Persero) Tbk.

#### 3.2 Data Sources

The research utilizes secondary data collected from:

1. Annual financial statements of PT Bank Rakyat Indonesia (Persero) Tbk (2020-2024);
2. Annual Report of Bank Rakyat Indonesia (Persero) Tbk (2020-2024); and
3. Relevant scientific literature and peer-reviewed journals.

#### 3.3 Data Collection Methods

Data was gathered through:

Document analysis of official financial reports from PT Bank Rakyat Indonesia (Persero) Tbk, Annual Report of Bank Rakyat Indonesia (Persero) Tbk and literature review of relevant academic journals and books.

### 3.4 Research Variables

#### Regression

Table 1  
Regression Variable

| Variable          | Type        |
|-------------------|-------------|
| Profitability     | Independent |
| NPL in Percentage | Dependent   |
| Loans             | Dependent   |

#### Correlation

Table 2  
Correlation Variable

| Variable      |                   |
|---------------|-------------------|
| Profitability | NPL in Rupiah     |
| Profitability | NPL in Percentage |

### 3.5 Data Analysis Techniques

Data analysis used in this study:

1. Descriptive Analysis: Examination of NPL, Loans, Profitability trends (2020-2024)
2. Inferential Analysis:
  - a. Pearson correlation to determine relationship strength and direction; and
  - b. Simple linear regression to assess NPL's impact on profitability

Elevated NPL levels consistently demonstrate an inverse relationship with bank profitability metrics, potentially reducing both profitability performance (Setiawan & Prasetyo, 2019)

## IV. RESULTS AND DISCUSSION

### 4.1 Result Regression Analysis of Credit, Non-Performing Loan (NPL) in Rupiah, and Profitability

Table 3  
 Credit, Non-Performing Loan (NPL) in Rupiah, and Profitability PT Bank Rakyat Indonesia (Persero)  
 Tbk 2020-2024

| Tahun | Loans (X1)                  | Non-Performing Loan (NPL)<br>in Rupiah (X2) | Profitability (Y)       |
|-------|-----------------------------|---------------------------------------------|-------------------------|
| 2020  | Rp 938.373.880.000.000,00   | Rp28.021.597.000.000,00                     | Rp18.660.393.000.000,00 |
| 2021  | Rp 1.042.867.454.000.000,00 | Rp31.238.375.000.000,00                     | Rp30.755.766.000.000,00 |
| 2022  | Rp 1.139.077.067.000.000,00 | Rp30.447.892.000.000,00                     | Rp51.408.207.000.000,00 |
| 2023  | Rp 1.266.429.247.000.000,00 | Rp37.322.700.000.000,00                     | Rp60.425.048.000.000,00 |
| 2024  | Rp 1.354.640.780.000.000,00 | Rp37.701.504.000.000,00                     | Rp60.643.808.000.000,00 |

From 2020 to 2024, Bank BRI has consistently extended loans to customers, as evidenced by the continuous annual increase in lending. The total Non-Performing Loans (NPL) have also risen each year, as the growing volume of loans is accompanied by an increased credit risk reflected in the higher NPL. The steadily increasing loan amount has contributed to the rise in profit, driven by the growth in interest income earned.

Table 4  
 Regression Loans, NPL in Rupiah, Profitability

| <i>Regression Statistics</i> |                    |
|------------------------------|--------------------|
| Multiple R                   | 0.963600974        |
| <b>R Square</b>              | <b>0.928526838</b> |
| Adjusted R Square            | 0.8570536750       |
| Standard Error               | 7.119780E+00       |
| Observations                 | 5                  |

|            | <i>df</i>   | <i>SS</i> | <i>MS</i> | <i>F</i>    | <i>Significance<br/>F</i> |
|------------|-------------|-----------|-----------|-------------|---------------------------|
| Regression | 2           | 1.32E+32  | 6.59E+31  | 12.99126564 | <b>0.07147316</b>         |
| Residual   | 0.943431909 | 1.01E+31  | 5.07E+30  |             |                           |
| Total      | 0.954658001 | 1.42E+32  |           |             |                           |

|                           | <i><b>Coefficients</b></i> | <i><b>Standard Error</b></i> | <i><b>t Stat</b></i> | <i><b>P-value</b></i> |
|---------------------------|----------------------------|------------------------------|----------------------|-----------------------|
| Intercept                 | <b>-7.0767E+00</b>         | 2.7432E+00                   | -2.579672132         | 0.12312378            |
| Non-Performing Loan (NPL) | <b>-1.71590292</b>         | 2.47659292                   | -0.692848189         | 0.56004439            |
| Kredit                    | <b>0.14950922</b>          | 0.06422039                   | 2.328064829          | 0.14533394            |

The regression results show an R-squared value of 0.93, indicating that the variables NPL and Loans can explain 93% of the variance in profit, while the remaining 7% is influenced by other factors. The significance F value from the regression is 0.071, which is above 0.05, indicating that the effect of NPL and Loans on profit is not statistically significant.

The regression formula of NPL and Loans on profit is:

$$Y = -7.077 - 1,72X_1 + 0,15X_2$$

The explanation is as follows:

- NPL has a negative coefficient, indicating that the higher the NPL, the lower the profit tends to be; and
- Loans have a positive coefficient, indicating that the higher the amount of loans, the higher the profit tends to be.

#### 4.2 Result Correlation between Credit, NPL in Rupiah, and Profitability

Table 5  
Correlation Analysis between Credit, NPL in Rupiah, and Profitability

|                           | <i><b>Loans</b></i> | <i><b>Non-Performing Loan (NPL)<br/>in Rupiah</b></i> | <i><b>Profitability</b></i> |
|---------------------------|---------------------|-------------------------------------------------------|-----------------------------|
| Loans                     | 1                   |                                                       |                             |
| Non-Performing Loan (NPL) | 0,943431909         | 1                                                     |                             |
| Profitability             | 0,954658001         | 0,857227302                                           | 1                           |

The results of the correlation analysis between NPL in Rupiah and Loans show a value of 0.94, indicating a strong and positive correlation between NPL in Rupiah and Loans, as the value is close to +1. The correlation between NPL in Rupiah and Profitability is 0.95, which also indicates a strong and positive relationship. The difference from the theoretical expectation is due to the fact that the NPL is analyzed in monetary units (Rupiah), where higher loan amounts are naturally aligned with higher credit risk, leading to an increase in NPL.

#### 4.3 Result Correlation of between Non-Performing Loan (NPL) in Rupiah in percentage, and Profitability

Table 6  
Non-Performing Loan (NPL) in Rupiah in percentage, and Profitability PT Bank Rakyat Indonesia (Persero) Tbk 2020-2024

| Year | Non-Performing Loan (NPL) in Percentage |    | Profitability         |
|------|-----------------------------------------|----|-----------------------|
| 2020 | 2,99%                                   | Rp | 18.660.393.000.000,00 |
| 2021 | 3,00%                                   | Rp | 30.755.766.000.000,00 |
| 2022 | 2,67%                                   | Rp | 51.408.207.000.000,00 |
| 2023 | 2,95%                                   | Rp | 60.425.048.000.000,00 |
| 2024 | 2,78%                                   | Rp | 60.643.808.000.000,00 |

From 2020 to 2024, Bank BRI has consistently provided loans to customers, as evidenced by the steady annual increase in loan amounts. However, Bank BRI has also continuously made improvements by reducing its NPL (Non-Performing Loan) percentage year by year. The decrease in the NPL percentage indicates that the loan collectability rate has been improving each years.

Table 7  
Correlation Analysis between NPL in Percentage and Profitability

|                                            | Non-Performing Loan (NPL)<br>in Percentage | Profitability |
|--------------------------------------------|--------------------------------------------|---------------|
| Non-Performing Loan (NPL)<br>in Percentage | 1                                          |               |
| Profitability                              | -0,585142257                               | 1             |

The results of the correlation analysis between NPL in Rupiah and Loans show a value of -0.59, indicating an inverse relationship between the NPL percentage and Loans. However, the correlation is not very strong, as the value is not close to -1.

## V. CONCLUSION

Based on the analysis results, it can be concluded that, the regression analysis shows that the influence of Loans and NPL in Rupiah as independent variables (X) is not highly significant on the profitability of Bank BRI as the dependent variable (Y). This is because BRI has other sources of income and various factors that can increase and maximize its profit. The results of the correlation analysis between NPL in Rupiah and the profitability of Bank BRI show a positive coefficient value, indicating a direct relationship. This is because as the amount of loans increases, the risk of NPL also rises, which can lead

to a decrease in the company's profit. The results of the correlation analysis between the NPL in Percentage and the profitability of Bank BRI show an inverse relationship, as indicated by a negative coefficient value. This suggests that a decrease in the NPL percentage will increase Bank BRI's profitability, due to a higher number of successfully collected loans.

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