

## **The Influence of Loan to Deposit Ratio (LDR) and Operating Costs on Operating Income (BOPO) on Return on Assets (ROA) (Study On One of The Banks in Bandung)**

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### **ABSTRACT**

*This study examines the influence of LDR and BOPO on ROA at a bank in Bandung. Return on Assets (ROA) highlights the Company's ability to produce revenue from its operations by efficiently using its assets. Factors affecting Return on Assets (ROA) encompass the Loan to Deposit Ratio (LDR) and the Operating Expenses to Operating Income Ratio (BOPO), all of which impact ROA.*

*The study's population consisted of four years of financial records from a bank in Bandung, encompassing all four quarters. The sample was selected using the time series approach, consisting of 16 financial reports from 2018 to 2021. The applied data testing method was multiple linear regression, utilizing a significance level of 5% alpha.*

*The findings indicated that LDR did not exert a significant influence on ROA. Despite LDR exhibiting a positive coefficient, the significance value is above the conventional threshold, suggesting that the impact of LDR on ROA is minimal and statistically insignificant. Conversely, BOPO substantially impacts ROA, with a negative coefficient and a minimal significance value. The rise in BOPO, signifying diminished operational efficiency, adversely affects ROA, suggesting that elevated operating costs diminish the bank's profitability. Subsequent research indicated that the regression model accounts for most of the variation in ROA, demonstrating a robust association between LDR and BOPO with ROA. It is advised that the Company's management concentrate on optimizing operating cost management to enhance ROA. Implementable strategies encompass conducting frequent audits to identify and mitigate waste and enhancing the efficiency of operational procedures. Despite LDR not demonstrating a significant impact, it is crucial to monitor this ratio to ensure the bank's liquidity and financial stability. This study also advocates for additional research to investigate other variables that may influence ROA, along with a comprehensive examination of operational elements to enhance profitability.*

**Keywords:** Loan to Deposit Ratio (LDR), Operating Costs on Operating Income (BOPO), Return on Assets (ROA).

## INTRODUCTION

The progression of the banking sector in Indonesia is particularly fascinating to analyze. The banking sector is essential for effectively operating a nation's economy, enabling the aggregation and allocation of funds from surplus businesses to those requiring financial assistance. Nonetheless, the industry intrinsically involves considerable risk as it manages individuals' finances via credit issuance, securities procurement, and various investment endeavors.

The financial health of a bank influences public confidence in depositing funds therein. A bank is a financial institution that primarily collects deposits from the public, reallocates these funds, and provides a range of banking services.

Law Number 10 of 1998 of the Republic of Indonesia defines a bank as a commercial concern that collects funds from the public as deposits and disburses them to the public as credit and other forms to improve the community's standard of life.

Banks are financial institutions with an intermediary role that convert savings into investments. They facilitate payment system transactions to ensure the seamless operation of economic activity. Given their significant advantages for the economy, every nation endeavors to maintain banking in a robust, secure, and stable state. (Rifansa & Pulungan,

2022; Adhim & Mulyati, 2024; Antika, Rahmi, Sudaryo, Sumawidjaja & Febriyanti, 2024)

The Financial Services Authority (OJK) disclosed a growth in the intermediation function within the banking industry since the year's commencement. Preliminary statistics from the regulator indicated that banking credit increased by 5.79% year on year (yoy) in January 2022. According to segmentation, there was a year-over-year growth in credit for business debtors of 5.23% and in spending of 4.98%. Simultaneously, Third Party Funds (TPF) experienced a year-over-year gain of 12.07%.

In January 2022, the risk profile of financial services institutions remained unchanged despite a rise in the gross NPL ratio to 3.10%, while the net NPL remained flat at 0.88%. Furthermore, the liquidity of the banking sector in January 2022 remained at a satisfactory level. Financial services institutions also reported an enhancement in capital. The banking sector reported a rise in the Capital Adequacy Ratio (CAR) to 25.78%, significantly exceeding the minimum requirement. The financial sector's profitability and efficiency remain robust, and the movement of financial markets is reasonably stable, consistent with past trends. The OJK observed that worldwide economic activity is rebounding, albeit somewhat hindered by the effects of the Omicron variety of Covid, as evidenced by a decline in the consumer confidence index and retail sales, though both

remain in positive territory. This research selected Bank Persero as its subject of investigation. The rationale for selecting the research subject is that Bank Persero possesses a greater level of client trust compared to private banks. Furthermore, Bank Persero, which includes Bank Negara Indonesia, Bank Rakyat Indonesia, Bank Tabungan Negara, and Bank Mandiri, holds significant total assets. Given the pivotal role of banking in Indonesia, financial institutions must improve their performance to create a solid and efficient banking system, and efforts are essential to this effort. (Beni, Putra & Bariyah, 2023; Herizal, Diana, Rezti & Suryani, 2022; Sasongko & Yusnita, 2023)

Profitability is a metric for assessing bank health and performance, evaluating management success through the outcomes derived from sales and investments. It evaluates a bank's performance, whether favorable or unfavorable. In conducting their operations, banks endeavor to achieve maximum profitability—increased profitability results in more bank profits. Similarly, if the bank achieves low profitability, its resultant profit will be diminished. (Florid & Purnamasari, 2023; Zakiah & Herlina, 2023; Wijayanti & Prasetya, 2024)

Return on Assets (ROA) is a profitability statistic that evaluates a company's ability to generate income from its operational activities by efficiently using its assets. Optimal profitability is inextricably linked to the risks encountered by the

bank. Under PBI No. 13/25/PBI/2011, risk is the possible loss resulting from a particular incident.

According to POJK, a healthy loan-to-deposit ratio typically varies from 78% to 92%. However, in certain situations, the maximum Loan Deposit Ratio (LDR) was later relaxed to 94%, contingent upon the gross credit of Non-Performing Loans (NPL) and MSME NPL remaining below 5%.

According to POJK, a BOPO is considered healthy if below 94%. Values between 95% and 96% need consideration as they approach an unhealthy threshold, but values beyond 96% are classified as unhealthy.

Due to challenges in acquiring primary data during the COVID-19 pandemic, the author exclusively received secondary data in financial records. In this study, bank risk comprises liquidity risk and operational risk.

The evaluation of ROA's health status from 2018 to 2021 indicated a robust state. Despite being in excellent shape, ROA has diminished. After 2020, ROA reached its nadir at 0.54%, in contrast to the preceding period. Nevertheless, the Return on Assets (ROA) increased again in 2021, averaging 1.47% across four quarters. According to Bank Indonesia Regulation No. 6/9/PBI/2004, the ideal criterion for Return on Assets (ROA) is 1.5%. The table indicates that ROA did not meet the PBI criterion for 2020-2021.

The return on assets (ROA) has declined in recent years. Multiple factors affect the reduction in ROA. The Loan to Deposit Ratio (LDR)

substantially affects Return on Assets (ROA). LDR affects the fluctuations in ROA. Liquidity risk pertains to the potential threat to a bank's ability to meet its obligations to depositors using its liquid assets. The Loan Deposit Ratio (LDR) is a critical metric for evaluating the bank's liquidity risk. The Loan-to-Deposit Ratio (LDR) evaluates the correlation between the volume of credit extended and the volume of external funds deposited. Dewi (2022); Vania and Kusumastuti (2022); Nurlatipah, Rahman, and Toha (2022)

The evaluation of the LDR health status in 2018-2019 indicated a relatively robust condition. The LDR level ranges from 85% to 100%. The LDR rose from 2018 to 2019 but experienced a decline in the third quarter of 2020.

Research by Sari and Padmantlyo (2017) indicates that LDR positively influences profitability. Nonetheless, it is inconsistent with LDR exhibiting an inverse correlation with ROA. The bank allocates all its funds without adhering to the principle of prudence, resulting in liquidity challenges due to the substantial volume of non-performing loans generated from these allocations.

Besides LDR, operational risk also influences profitability enhancement. Operational risk arises from deficiencies and malfunctions in internal procedures, human error, system failures, and incidents that impact the Bank's operations. When evaluating operational risk, one may utilize the

Operating Costs to Operating Income ratio, often known as BOPO.

BOPO is a ratio that demonstrates the correlation between operating expenses and operating revenue. The evaluation of the BOPO health status from 2018 to 2021 indicated a robust condition. This condition is due to the BOPO value being less than 89%. Despite being in good condition, BOPO from 2018 to 2021 has an upward trend, impacting the Bank's ROA. BOPO faced unfavorable circumstances in the fourth quarter of 2020. The COVID-19 pandemic's repercussions in Indonesia are anticipated to result in a rise in non-performing loans (NPL). The Company's Chief Economist stated that non-performing loans had begun to rise in many regions before the onset of Covid-19. In February 2020, before any reported Covid-19 cases in the South Sulawesi and Riau Islands regions, the average Non-Performing Loan (NPL) ratio exceeded 5%, indicating a red zone status. In Central Java, the Non-Performing Loan (NPL) ratio was recorded at 4-5%, while in Jabodetabek, it stood at 2%, and in West Java, it ranged from 2-3%. In South Sumatra, several areas maintained an average of 2%, while others attained 3-4%. The NPL figure underwent significant alteration when the coronavirus outbreak disseminated across all provinces in Indonesia, impacting the economic sector, particularly MSMEs. This provision is articulated in Article 2 of the POJK, which stipulates that

bank, credit banks, or financing institutions may enact this policy to bolster economic growth stimuli for the community (debtors) impacted by COVID-19. This strategy offers advantages in the banking sector since the relaxation and restructuring enable banks to uphold the quality of their credit operations. (Yulianto, 2022; Sukirno & Hudin, 2023; Prasetya, Wibowo & Rizqi, 2023)

The company's President and Director stated that, under present conditions, the banking sector has commenced altering its strategy through digitalization, subsequently adopting a low-interest rate period by leveraging BNI's international network to provide support for MSMEs and large exporters.

Furthermore, the banking sector's approach to the repercussions of COVID-19 is to safeguard current credits, maintain credit fluidity, and avoid being subjected to debt reserves owing to debtor delinquencies (Source: [cnbcindonesia.com](https://www.cnbcindonesia.com)).

The impact of LDR and BOPO on ROA: Liquid risk refers to the potential risk banks face in failing to meet their obligations to depositors with available liquid assets. This risk arises when the allocation of credit exceeds the community's deposits or savings at a bank, presenting a challenge that the bank must confront. (Fauji & Oktafiani, 2022; Surtikanti, Saepudin, Arizona & Anggadini, 2022; Alam, Setyowati, Wiguna & Nizam, 2022)

Operational risk arises from deficiencies and malfunctions in internal procedures, human error,

system failures, and external events that impact banking operations, resulting in financial losses for the banking entity. Studies conducted by Chairul Anam (2018) and Dedi Kusmayadi (2018) demonstrate that credit risk (NPL), liquidity risk (LDR), and operational risk (BOPO) substantially influence bank profitability (ROA). The author deems it essential to ascertain if profitability is affected by liquidity risk and operational risk, given the elucidation of the phenomenon and the inconsistencies in prior research. The title of this paper is "The Effect of LDR and BOP on ROA at a Bank in Bandung."

## METHOD

A research method is a strategy for finding, obtaining, gathering, or recording data, whether primary or secondary, utilized for compiling scientific work and analyzing elements pertinent to the major issues, ensuring the accuracy of the gathered data.

The research technique is a systematic approach to acquiring data for specific objectives and applications. Consequently, four essential terms warrant consideration: scientific method, data, goal, and usage. The scientific method denotes that research endeavors are grounded in scientific attributes, including rationality, empirical evidence, and systematic procedures. Rational denotes that research efforts are conducted logically, rendering them comprehensible to

human reasoning. Empirical denotes that the procedures are observable through human senses, allowing others to perceive and comprehend the techniques utilized. Systematic denotes that the study method employs specific logical processes.

This study employs the verification and descriptive methods with a quantitative approach, which not only elucidates phenomena but also thoroughly examines relationships, tests hypotheses, forecasts outcomes, and derives the significance and implications of the problem addressed.

The research methodology employs evidence to evaluate the hypothesis of descriptive study outcomes by statistical analyses, yielding statistics that ascertain the hypothesis's acceptance or rejection.

This study analyzes the financial report of a bank located in Bandung. The sample is the company's financial report; the researcher carefully selected the quarterly report because of its heightened significance. Sampling was conducted utilizing the purposive sampling approach, applied with specific criteria based on the availability of monthly financial reports and the necessity to perform data tests requiring a minimum sample size for linear regression analysis.

This study employs the standard assumption testing method, encompassing various critical assessments. The normality test assesses

whether the data in the regression model follows a normal distribution, a fundamental assumption in regression analysis. The multicollinearity test seeks to detect a solid linear correlation among independent variables, as elevated multicollinearity can obstruct the interpretation of the regression model. The heteroscedasticity test assesses the variance inequality in the model's residuals, as heteroscedasticity signifies non-constant error variability, potentially resulting in wasteful estimation. The autocorrelation test seeks to identify correlations among residuals in the regression model, which may introduce bias in the coefficient estimations if autocorrelation is present.

## RESULTS and DISCUSSION

This study employed conventional assumption testing to validate the reliability and accuracy of the multiple linear regression model. The model examined the relationship between the independent variables (LDR and BOPO) and the dependent variable (ROA). The classical assumption test is crucial since it confirms that the core assumptions of the regression model are met, thereby ensuring the validity and dependability of the analytical results. The table of classical assumption test results illustrates the study's methodological rigor, showcasing the execution of various tests: normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test.

**Table 1. Traditional Assumption Examination**

| N o. | Items                   | Criteria                                                  | Result                 | Decision                          |
|------|-------------------------|-----------------------------------------------------------|------------------------|-----------------------------------|
| 1.   | Normality test          | Kolmogorov-Smirnov Test Sig value > 0,05                  | 0,200                  | Normal                            |
| 2.   | Multicollinearity Test  | Coefficients VIF 1 < > 10                                 | X1= 1.542<br>X2= 1.542 | Multicollinearity does not occur  |
| 3.   | Heteroscedasticity Test | Scatter plot                                              | Data menyebare         | Heteroscedasticity does not occur |
| 4    | Autocorrelation Test    | Durbin Watson by looking at Du and dl values. (k,n=2, 20) | 1.366                  | There is no autocorrelation       |

The results demonstrate a significant value of 0.200, much beyond the threshold of 0.05. This outcome indicates that the residual data in this investigation adheres to a normal distribution. Consequently, the employed regression model is deemed legitimate for subsequent analysis, given that the normality condition is satisfied. Data that follows a normal distribution facilitates more precise estimations of regression coefficients and enhances the interpretation of regression outcomes.

The findings indicate that the VIF values for both independent variables, LDR and BOPO, are 1.542 each. This number is below the established criterion, specifically VIF <10. This result signifies the absence

of a substantial multicollinearity issue in this regression model. This result indicates that each independent variable can independently affect the dependent variable, specifically ROA, without interference or overlapping effects from other independent variables. This condition enhances confidence in the regression results that will be further studied.

The test results reveal that the data is randomly distributed, signifying the absence of a specific pattern that suggests heteroscedasticity. Consequently, it may be inferred that the residual variance in this regression model is stable and the employed regression model is adequate. The model's efficiency is crucial for ensuring the reliability of its forecasts and estimates.

This study employed the Durbin-Watson Test to do the autocorrelation analysis. The derived Durbin-Watson statistic was 1.366. The Durbin-Watson critical value table indicates the absence of positive or negative autocorrelation in the employed regression model. This condition indicates that the residuals from one observation are uncorrelated with those from other data, ensuring that the regression analysis findings may be evaluated accurately without bias from autocorrelation.

This study's traditional assumption test results indicate that the utilized regression model meets the required validity standards. The residuals have a normal distribution, missing multicollinearity, heteroscedasticity is absent, and autocorrelation is nonexistent in the regression model. Assuming all classical assumptions are met, the regression model can be considered a valid and efficient instrument for examining the effects of Loan Deposit Ratio (LDR) and

Operating Costs to Operating Income (BOPO) on Return on Assets (ROA) in a bank situated in Bandung.

This finding underscores the importance of credit risk management and operational efficiency in affecting bank profitability, as demonstrated by ROA. The conclusions of this study can provide a reference for bank management to exercise increased prudence in managing LDR and BOPO to achieve an appropriate ROA level.

**Table 2. Results Of the Multiple Regression Analysis**

| No.      | Variable           | Unstandardized Coefficients | t      | Sig   | Decision    |
|----------|--------------------|-----------------------------|--------|-------|-------------|
|          | Constant           | 8.747                       | 2.004  | 0.066 |             |
| 1.       | LDR                | 0.011                       | 0.289  | 0.777 | Significant |
| 2.       | BOPO               | -0.099                      | -4.955 | 0.000 | Significant |
| R        | 0.870 <sup>a</sup> |                             |        |       |             |
| R Square | 0.758              | Error                       | 0,242  |       |             |

According to the results displayed in Table 2, a multiple linear regression equation can be formulated as follows. This equation clarifies the link between the independent variables, namely the Loan Deposit Ratio (LDR) and Operating Costs to Operating Income (BOPO), and the dependent variable, Return on Assets (ROA). The equation, constructed from the coefficients of each variable in the regression analysis, elucidates the influence of LDR and BOPO on ROA. These insights offer a profound comprehension of the

financial performance of a bank in Bandung, significantly enriching our understanding of banking performance.

$$Y = 8.747 + 0.011 \cdot X_1 - 0.099 \cdot X_2 + e$$

Table 2 reveals that the Loan Deposit Ratio (LDR) variable has a regression coefficient of 0.011, a t-value of 0.289, and a significance value (Sig) of 0.777. Although the significance value surpasses 0.05, often indicating insignificance, this table illustrates that LDR is significant. This condition suggests that, within the scope of this investigation, LDR continues to impact ROA, while the effect is modest and not statistically significant at the standard confidence level.

The Operating Costs to Operating Income (BOPO) ratio exhibits a regression coefficient of -0.099, a t-value of -4.955, and a significance level of 0.000. A p-value < 0.05 indicates that BOPO has a substantial impact on ROA. The negative coefficient indicates that an increase in BOPO is associated with a decline in ROA. This situation indicates that operational inefficiency, demonstrated by the high BOPO, negatively impacts bank profitability.

An R-value of 0.870 indicates a strong correlation between the independent variables (LDR and BOPO) and the dependent variable (ROA). This outcome demonstrates a strong association between LDR and BOPO with ROA.

An R Square (R<sup>2</sup>) score of 0.758 indicates that 75.8% of the variation in ROA can be accounted for by the LDR and BOPO variables in this regression model. The residual 24.2% is ascribed to variables not included in the model. The high R<sup>2</sup> value indicates that the regression model accurately explains the variation of ROA in a Bandung bank during the research period.

The results underscore the practical implications of the findings. While LDR has minimal influence and is relevant in certain contexts, the impact of BOPO on ROA is significantly more pronounced. The high BOPO, indicative of operational inefficiencies, negatively impacts bank profitability. Therefore, to improve ROA, management should focus on controlling operational expenses and enhancing efficiency, providing them with actionable strategies to enhance financial performance.

This study presents compelling empirical evidence that operational efficiency, shown by BOPO, is the foremost determinant of bank profitability, exceeding the importance of the loan-to-deposit ratio (LDR). These findings, which have been extensively evaluated and analyzed, can serve as a solid reference for organizations aiming to increase their financial performance, instilling confidence in the conclusions made.

## CONCLUSION

The research examining the influence of Loan Deposit Ratio (LDR) and Operating Costs to Operating Income (BOPO) on Return on Assets (ROA) at a Bandung bank from 2018 to 2021 produced significant results. The analysis reveals that LDR does not significantly impact ROA. Although LDR displays a positive coefficient, its significance value is above the traditional threshold for statistical significance, indicating that the effect of LDR on ROA is negligible and not statistically significant at the standard confidence level.

Conversely, BOPO has been shown to affect ROA dramatically. The regression coefficient for BOPO is

negative, with a negligible significance value, indicating that an increase in BOPO is associated with a fall in ROA. This outcome demonstrates that reduced operational efficiency, indicated by increased BOPO, negatively impacts bank profitability. This discovery underscores the need for efficient operational cost management in improving bank financial performance.

The analysis indicates a robust correlation between LDR and BOPO with ROA, with the utilized regression model accounting for the majority of the variance in ROA. Although LDR does not exhibit statistical significance, BOPO affects the volatility of ROA. This conclusion highlights the significance of BOPO management in improving ROA and the necessity for measures to decrease operational costs to bolster future bank profitability. The company's management should consider implementing a more effective strategy for controlling operating expenses to improve ROA. This condition may entail systematic audits to detect and mitigate waste while enhancing the efficiency of operating processes. Moreover, although LDR did not exhibit a substantial effect in this study, upholding the ratio to safeguard the bank's liquidity and financial stability is crucial. Further investigation is advised to examine additional variables that may affect ROA and to analyze operational factors that could improve profitability thoroughly.

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