



Analysis of the Effect of Capital Adequacy Ratio on Banking Financial Stability in Indonesia

Rena Regina¹

¹ Universitas Djuanda, Bogor, Indonesia

Abstract

Article history:

Received: January 7, 2024
Revised: February 21, 2024
Accepted: April 9, 2024
Published: June 30, 2024

Keywords:

Capital Adequacy Ratio,
Efficiency,
Financial Stability,
Profitability.

Identifier:

Zera Open
Page: 18-36
<https://zeraopen.com/journal/amos>

This study aims to analyze the effect of the Capital Adequacy Ratio on the financial stability of Indonesian banking, measured by Return on Assets. A quantitative approach was employed, utilizing secondary data from the Financial Services Authority (*Otoritas Jasa Keuangan*) Banking Statistics for the period from January 2022 to January 2023. The analysis utilized simple linear regression with SPSS version 25. The results indicate that the Capital Adequacy Ratio has a positive but insignificant effect on Return on Assets. The coefficient of determination (R^2) of 0.074 indicates that only 7.4% of the variation in Return on Assets is explained by Capital Adequacy Ratio, while 92.6% is influenced by other factors, such as operational efficiency and risk management. These findings suggest that although capital adequacy plays a vital role in maintaining bank resilience, it is not the main determinant of profitability. Sustainable financial stability thus requires a balance between capitalization, asset efficiency, and prudent risk management.



1. Introduction

Banking financial stability is a fundamental aspect in maintaining the sustainability of the national financial system. Banks as intermediary institutions have a strategic role in channeling public funds to productive sectors, so that banks' resilience to risks is the main concern of regulators and policy makers. One of the important indicators in assessing resilience is the Capital Adequacy Ratio (CAR), which describes the bank's ability to absorb potential losses arising from operational activities. The high CAR reflects adequate capital adequacy and shows the bank's capacity to maintain stability when facing external and internal pressures (Hersugondo et al., 2021). Thus, the relationship between CAR and banking financial stability continues to be an interesting topic to study, especially in the context of Indonesia's dynamic economy.

A number of studies show that CAR plays a significant role in the performance and financial stability of banks. According to Usman et al. (2019), capital adequacy has a positive effect on banks' resilience to credit and liquidity risks. This is in line with Setiawan and Muchtar (2021) who emphasized that a high CAR increases investor confidence and reduces the potential for liquidity pressure. However, these positive effects are not always linear. Several studies have found that too high CAR actually indicates inefficiency in capital management and can suppress bank profitability if it is not accompanied by productive credit distribution (Irawati et al., 2019).

In Indonesia's empirical context, data from the Indonesian Banking Statistics (SPI) of the Financial Services Authority (OJK) shows that during the period from

January 2022 to January 2023, the national banking CAR ratio was in the range of 24–26 percent, far above the minimum limit set at 8 percent. However, the Return on Assets (ROA) ratio, which is an indicator of profitability and financial stability, shows fluctuations due to adjustments to changes in the benchmark interest rate and global economic dynamics. This indicates that high CAR does not necessarily directly guarantee an increase in the bank's financial stability, especially when faced with external risks such as market volatility and changes in monetary policy. Herlina and Suryaningprang (2023) emphasized that the effectiveness of CAR in strengthening stability is highly dependent on asset structure and risk management efficiency.

In addition to internal factors, several studies have also highlighted the importance of integration between capital adequacy and bank governance. Machdar (2020) found that banks with a level of financial inclusion and good governance showed stronger resilience to economic shocks despite having CAR variations. Meanwhile, Sari et al. (2022) show that the influence of CAR on financial stability can be strengthened when balanced with healthy credit and liquidity risk management. These findings confirm that CAR functions not only as an indicator of financial health, but also as a prudential policy tool in maintaining the sustainability of the banking system.

Based on the description above, this study focuses on analyzing the influence of Capital Adequacy Ratio (CAR) on the financial stability of Indonesian banks by using Return on Assets (ROA) data as the main indicator during the period from January 2022 to January 2023. This research is expected to make an empirical

contribution in enriching the literature on the relationship between capital adequacy and bank financial stability in the post-pandemic era. In addition, the results of this study can serve as a reference for regulators such as OJK and Bank Indonesia in formulating capital policies that are adaptive to changing macroeconomic conditions and maintaining a balance between profitability and resilience of the national banking system.

2. Literature Review

2.1 Capital Adequacy Ratio (CAR) and Banking Financial Stability

Capital Adequacy Ratio (CAR) is the main indicator used to assess the bank's ability to bear the risk of losses that may arise from its operational activities. According to Usman et al. (2019), this ratio describes the extent to which the bank's capital is able to cover risk-weighted assets, so the higher the CAR, the stronger the bank's capital position in the face of potential losses. In the context of Indonesian banking, the Financial Services Authority (OJK) requires a minimum CAR of 8%, but most national banks keep the CAR above 20% to ensure business sustainability and market confidence.

Empirical research shows that CAR has a positive relationship with bank financial stability. Setiawan and Muchtar (2021) stated that strong capital increases banks' ability to distribute credit and reduces the risk of default. On the other hand, if the CAR is too high without optimizing productive assets, it can reduce the bank's efficiency and profitability. Herlina and Suryaningprang (2023) emphasized that financial stability is not only determined by capital adequacy, but also by the

effectiveness of risk management and funding structures. Thus, CAR can be seen as a key variable that serves a dual function: maintaining solvency and strengthening the stability of the national financial system.

Hypothesis 1 (H₁): Capital Adequacy Ratio (CAR) has a positive effect on banking financial stability in Indonesia.

2.2 The Effect of Capital Adequacy Ratio on Profitability and Stability (ROA)

Profitability is often used as an indicator of financial stability because it reflects a bank's ability to generate sustainable profits. Return on Assets (ROA) is the main measure to assess the efficiency of banks in utilizing their assets. Based on the findings of Irawati et al. (2019), CAR plays a significant role in increasing ROA because strong capital provides space for credit expansion and productive intermediation activities. However, this relationship is not always linear due to the trade-off between capital levels and asset allocation efficiency.

The Machdar study (2020) confirms that banks with high CAR show better financial stability, especially when accompanied by effective and inclusive governance policies. Meanwhile, Sari et al. (2022) found that the influence of CAR on profitability can be mediated by sound credit risk management and liquidity. Thus, an increase in CAR can strengthen financial stability through increased profitability and resilience to market risks. In this context, the CAR is not only a prudential indicator, but also a strategic instrument in maintaining a balance between profitability and the long-term stability of national banking.

Hypothesis 2 (H₂): Capital Adequacy Ratio (CAR) has a positive effect on Return on Assets (ROA) as an indicator of banking financial stability.

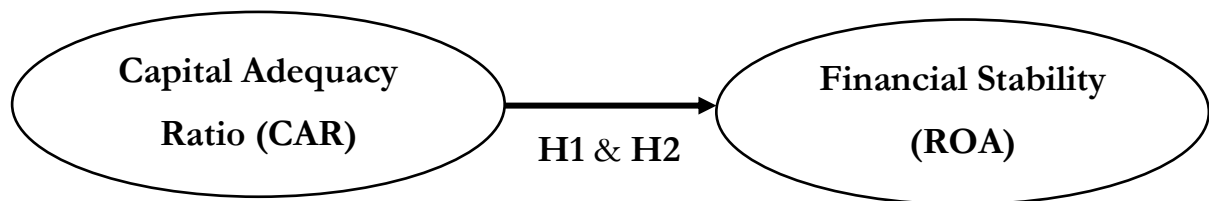


Figure.1 Conceptual Framework

Explanation: The conceptual framework illustrates that the Capital Adequacy Ratio (CAR), as the independent variable, is expected to have a positive effect on financial stability, which is measured by the Return on Assets (ROA). A higher CAR indicates stronger capital resilience, enabling banks to absorb potential losses and maintain consistent profitability, thereby enhancing overall financial stability.

3. Methods

This study uses a quantitative approach with the aim of empirically examining the influence of Capital Adequacy Ratio (CAR) on banking financial stability as measured through Return on Assets (ROA). The quantitative approach was chosen because it was able to objectively describe the causal relationships between variables through statistical analysis. This type of research is causal associative, namely to determine the extent to which independent variables (CAR) affect dependent variables (ROA) in the banking sector in Indonesia. The data used is secondary data

obtained from the official publication of Indonesian Banking Statistics (SPI) published by the Financial Services Authority (OJK) for the period January 2022 to January 2023.

The population in this study includes all commercial banks operating in Indonesia, while the sample was taken by purposive sampling method based on the criteria of banks that have complete financial statements during the observation period. The data was analyzed using the Statistical Package for the Social Sciences (SPSS) software. The analysis was carried out through several stages, including descriptive statistics, classical assumption tests (normality, multicollinearity, and heteroscedasticity), and simple linear regression analysis to test the relationship between CAR and ROA. The regression model used is formulated as follows:

$$ROA = \alpha + \beta(CAR) + \epsilon$$

where α is a constant, β is the regression coefficient that shows the direction and magnitude of the influence of CAR on ROA, and ϵ is the error term. Hypothesis tests were performed with a t-test to determine the significance of the influence of a partially independent variable, as well as a determination test (R^2) to measure how much variation in ROA can be explained by CAR. The test results will later show whether the hypothesis proposed that the Capital Adequacy Ratio has a positive effect on Return on Assets is accepted or rejected. Thus, this quantitative method is expected to be able to provide valid empirical evidence regarding the role of capital adequacy in strengthening banking financial stability in Indonesia.

4. Results

This chapter discusses the results of the analysis of research data on the effect of Capital Adequacy Ratio (CAR) on banking financial stability as measured through Return on Assets (ROA). The study used secondary data from the publication of Indonesian Banking Statistics (SPI) of the Financial Services Authority (OJK) during the period January 2022 to January 2023 with a total of 13 months of observations. The analysis was performed quantitatively using SPSS software version 25 to test the causal relationship between the variables CAR(X) and ROA(Y) through simple linear regression.

Tabel.1 Output SPSS Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Hours of deviation
CAR	13	24.35	25.89	25.2085	.51011
LENGTH	13	1.59	1.86	1.7062	.08150
Valid N (listwise)	13				

Based on table 1 of the Descriptive Statistics output, the CAR variable has a minimum value of 24.35, a maximum of 25.89, with a mean of 25.2085 and a standard deviation of 0.51011. Meanwhile, the ROA variable has a minimum value of 1.59, a maximum of 1.86, with an average of 1.7062 and a standard deviation of 0.08150. This data shows that during the study period, the level of capital adequacy of national banks was in a very strong and stable condition, far above the OJK minimum requirement of 8%. Meanwhile, the level of profitability measured by

ROA also showed relatively small fluctuations, signaling consistent profitability conditions.

This result is in line with the findings of Usman et al. (2019) who stated that Indonesian banks tend to keep CAR at a high level as an effort to strengthen market confidence and reduce the risk of default. The low standard deviation in both variables shows that during the 13 months of observation, neither CAR nor ROA experienced extreme changes, indicating that the financial stability of the national banking sector is maintained.

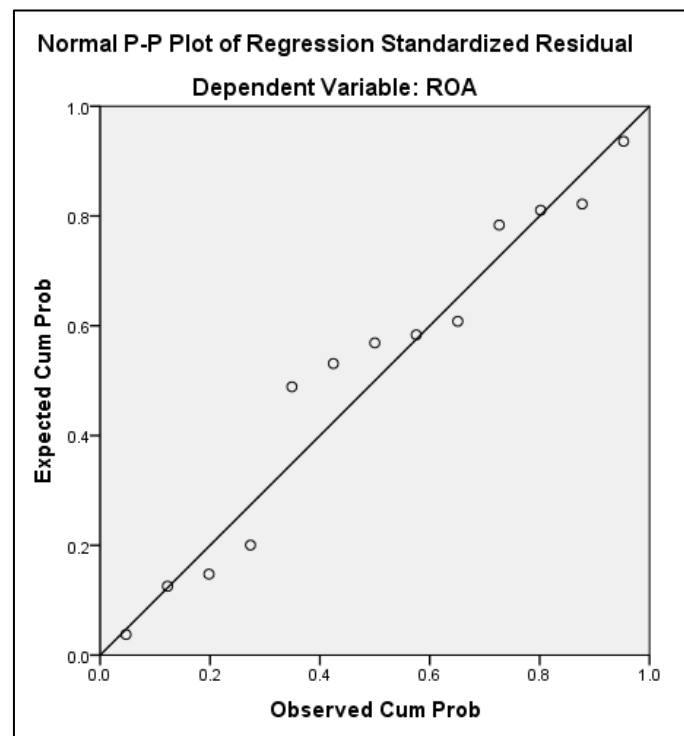


Figure 2 Outpus SPSS Normality Test

Figure 1 shows the normality test results shown by the Normal P–P Plot of Regression Standardized Residual showing that the residual data points are scattered around the diagonal line and follow the direction of the line. This pattern indicates that the residual model is normally distributed, so that the assumption of normality in the regression model is met. With the fulfillment of this assumption, the regression model can be said to be suitable for use in inferential analysis. According to Setiawan and Muchtar (2021), fulfilling normality assumptions is important in regression analysis because it ensures that the results of the coefficient estimation are BLUE (Best Linear Unbiased Estimator). The normal residual distribution guarantees that the prediction errors in the model are not skewed in a certain direction, so that the relationship between CAR and ROA can be validly tested.

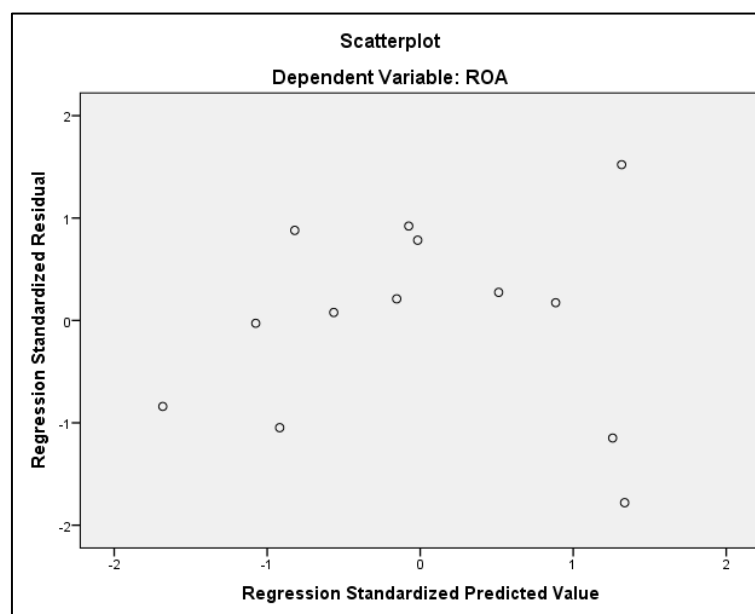


Figure.3 Outpus SPSS Heteroscedasticity Test

Figure 2 shows the results of the Scatterplot between Regression Standardized Predicted Value and Regression Standardized Residual showing that the data points are spread randomly, either above and below the zero axis without forming a specific pattern. This means that the regression model does not experience symptoms of heteroscedasticity, or in other words that residual variance is constant. This condition reinforces that the model meets the classical assumption of linear regression. According to Putra et al. (2022), heteroscedasticity can lead to bias in the calculation of standard coefficients of error, resulting in errors in hypothesis testing. Because no systematic pattern was found, this research model is free of these problems, so that the regression results can be interpreted accurately.

Tabel.2 Output SPSS Model Summary

Model Summary^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.272 ^a	.074	-.010	.08191
a. Predictors: (Constant), CAR				
b. Dependent Variable: ROA				

Based on the results of a simple linear regression analysis conducted to determine the effect of Capital Adequacy Ratio (CAR) on Return on Assets (ROA), the results were obtained that the relationship between the two variables was positive but weak. A correlation value (R) of 0.272 suggests that an increase in CAR is likely to be followed by an increase in ROA, but the strength of the relationship is relatively

small. A determination coefficient value (R^2) of 0.074 indicates that CAR is only able to explain about 7.4 percent of the variation in ROA changes, while the rest, which is 92.6 percent, is influenced by other factors outside the model such as operational efficiency, asset quality, and credit risk management. A negative Adjusted R^2 value (-0.010) indicates that the model's ability to predict changes in ROA is very limited, mainly due to the relatively small amount of observational data.

Tabel.3 Output SPSS ANOVA

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Say.
1	Regression	.006	1	.006	.881	.368b
	Residual	.074	11	.007		
	Total	.080	12			
a. Dependent Variable: ROA						
b. Predictors: (Constant), CAR						

Based on table 3, the results of the F test in the ANOVA table show an F value of 0.881 with a significance level of 0.368, which is greater than 0.05. This indicates that the regression model is simultaneously insignificant, so it can be concluded that the overall CAR variable does not have a strong influence on ROA during the study period. In other words, the variation in ROA that occurred in Indonesian banks in the period from January 2022 to January 2023 cannot be fully explained by the change in CAR. The regression equation resulting from this analysis is: $ROA = 0.610 + 0.043(CAR)$.

Tabel.4 Output SPSS Coefficients

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.610	1.169		.522	.612
	CAR	.043	.046	.272	.938	.368
a. Dependent Variable: ROA						

Based on table 4, each one unit increase in CAR will be followed by an increase in ROA of 0.043 units, assuming other variables remain constant. Although the regression coefficient indicates a positive relationship direction, a t-value of 0.938 with a significance of 0.368 (greater than 0.05) shows that the effect is not statistically significant. This means that changes in the level of capital adequacy have not been able to have a real impact on changes in banking profitability.

From these results, it can be concluded that the Capital Adequacy Ratio (CAR) has not become the dominant factor in determining the level of Return on Assets (ROA) in the Indonesian banking sector. Although strong capital reflects financial resilience, its effectiveness in increasing profits still depends on the bank's ability to efficiently manage assets and optimize the intermediation function. Thus, the research hypothesis that CAR has a positive and significant effect on ROA is rejected, because the influence found is not strong enough to be statistically proven.

These findings show that a bank's high level of capital does not necessarily have a direct impact on increasing profitability. This is in line with the research of Irawati et al. (2019), which found that a high CAR does not necessarily reflect the

efficiency of capital management. Large capital that is not used for the expansion of productive assets can reduce potential profits, so that its influence on ROA becomes weak.

These results are also supported by Machdar (2020), who states that banks that maintain high capital generally have strong financial stability, but this does not necessarily correlate with increased profitability, especially in volatile economic situations. On the other hand, Sari et al. (2022) emphasized that the influence of CAR on profitability can be strengthened if it is accompanied by good credit and liquidity risk management. Thus, the low significance of the relationship between CAR and ROA in this study can be due to the stability of banking conditions that are too homogeneous during the observation period, where the variation in CAR and ROA is relatively small (standard deviation is low).

In addition, external factors such as interest rate policy, global liquidity, and OJK's macroprudential policy also play an important role in the bank's profitability. Sistiyanini et al. (2021) in their research on Regional Development Banks showed that CAR changes function more as a buffer for stability than as a driver of short-term profitability. Thus, it can be said that CAR plays more of a prudential variable than a profit-oriented one in the context of Indonesian banking.

The results of the analysis show that the Capital Adequacy Ratio (CAR) has a positive but not significant influence on Return on Assets (ROA). An R^2 value of 0.074 indicates that CAR only explains 7.4% of the variation in ROA changes, while the rest is influenced by other factors. A significance value of $0.368 > 0.05$ and a positive coefficient of 0.043 indicate that an increase in CAR is likely to be followed

by an increase in ROA, but it is not statistically strong enough. This condition indicates that the adequacy of banking capital in Indonesia during the period January 2022-January 2023 is at a healthy and stable level, but it has not yet become the main factor in increasing profitability. This result is in line with the research of Irawati et al. (2019) and Machdar (2020) who stated that high capital does not necessarily have a significant impact on the bank's profit performance.

5. Discussion

The results of the study show that the Capital Adequacy Ratio (CAR) has a positive but not significant effect on the Return on Assets (ROA) of Indonesian banks for the period January 2022-January 2023. This means that even if capital adequacy increases, the impact on profitability is not statistically strong enough. These findings indicate that capital factors are not the only determinant of banking financial stability, but need to be balanced with operational efficiency, risk management, and good asset quality.

According to Usman et al. (2019), a high CAR reflects the bank's ability to bear credit risk, but if excess capital is not followed by productive credit disbursement, then the potential for profit becomes limited. Similar results were also found by Irawati et al. (2019), who stated that the relationship between CAR and ROA can weaken when banks are unable to optimize their productive assets. In this context, banks with large capital are not necessarily more profitable than banks that are more efficient in utilizing their assets and liquidity.

During the study period, the data showed that the national banking CAR was in the range of 24–26%, while the ROA was relatively stable at around 1.7%. This condition shows that the Indonesian banking system has high capital resilience but profitability growth tends to be stagnant. This is in line with the view of Machdar (2020), who explained that the role of CAR is more dominant in maintaining financial system resilience than increasing short-term profits. In other words, CAR functions as a financial buffer that maintains investor confidence and bank liquidity, not as the main tool to increase profitability.

Research by Sari et al. (2022) confirms that the influence of CAR on ROA will be more significant if accompanied by effective credit and liquidity risk management. This shows that the relationship between capital and financial stability is indirect, depending on managerial factors and macroeconomic conditions. Similarly, Herlina and Suryaningprang (2023) found that banks with high efficiency are better able to utilize their capital to drive sustainable profitability.

Theoretically, the results of this study reinforce the concept that capital adequacy has the main function as a risk mitigation tool, not as a direct driver of profitability. In the post-pandemic context and rising global interest rates, banks in Indonesia are more focused on maintaining solvency and market confidence rather than pursuing short-term profit increases. Therefore, this study confirms that the financial stability of banks is not only determined by the level of capital, but by the balance between capital, risk, and operational efficiency.

6. Conclusion

Based on the results of data analysis and discussions that have been conducted, it can be concluded that the Capital Adequacy Ratio (CAR) has a positive but not significant influence on Return on Assets (ROA) in Indonesian banks for the period January 2022-January 2023. These results show that although capital adequacy plays an important role in maintaining financial stability, its contribution to bank profitability is still limited. An R^2 value of 0.074 indicates that CAR is only able to explain 7.4% of the variation in ROA changes, while the rest is influenced by other factors such as operational efficiency, risk management, and macroeconomic conditions. In general, these findings show that the primary function of CAR is more as a buffer against financial risk than as a direct driver of profitability. Therefore, efforts to improve financial stability are not enough just by strengthening capital, but must also be balanced with efficient asset management strategies and the implementation of effective risk governance. With the synergy between strong capital, asset efficiency, and good risk management, financial stability in Indonesia can be maintained in a sustainable manner without sacrificing long-term profit performance.

References

Herlina, L., & Suryaningprang, A. (2023). Measuring the Capital Adequacy Ratio for Bank Business Activity Group 3 that listed in Indonesia Stock Exchange. *Jurnal Ilmu Keuangan Dan Perbankan (JIKA)*, 12(2), 181-190.

- Hersugondo, H., Anjani, N., & Pamungkas, I. D. (2021). The role of non-performing asset, capital, adequacy and insolvency risk on bank performance: a case study in Indonesia. *The Journal of Asian Finance, Economics and Business*, 8(3), 319-329.
- Irawati, N., Maksum, A., Sadalia, I., & Muda, I. (2019). Financial performance of Indonesian's banking industry: the role of good corporate governance, capital adequacy ratio, non performing loan and size. *International Journal of Scientific and Technology Research*, 8(4), 22-26.
- Machdar, N. M. (2020). Financial inclusion, financial stability and sustainability in the banking sector: The case of Indonesia. *International Journal of Economics and Business Administration*, 8(1), 193-202.
- Otoritas Jasa Keuangan. (2023). *Statistik Perbankan Indonesia (SPI) – January 2023*. Departemen Penelitian dan Pengaturan Perbankan, Otoritas Jasa Keuangan, Jakarta. Retrieved October 10, 2023 From <https://ojk.go.id/id/kanal/perbankan/data-dan-statistik/statistik-perbankan-indonesia/Pages/Statistik-Perbankan-Indonesia---Januari-2023.aspx>
- Putra, Y., Marlina, E., & Sari, D. P. P. (2022). Pengaruh Capital Intensity Dan Kebijakan Hutang Terhadap Agresivitas Pajak. *Jurnal Akuntansi, Keuangan Dan Teknologi Informasi Akuntansi*, 3(1), 554-562.
- Sari, L. F., Alfarisi, F., & Adrianto, F. (2022). The Influence of Credit Risk, Liquidity Risk, and Capital Adequacy on Financial Performance in the Banking Sector Listed on the Indonesia Stock Exchange 2016-2020 Period: Before and During Covid-19. *Enrichment: Journal of Management*, 12(4), 2913-2917.

- Sistiyarini, E., Effendi, M. B., & Sunani, A. (2021). Analysis of the Factors on the Performance of Regional Development Banks in Indonesia. *International Journal of Business Marketing and Management*, 6(7), 62-73.
- Setiawan, A., & Muchtar, S. (2021). Factor affecting the capital adequacy ratio of banks listed in Indonesia Stock Exchange. *Jurnal Ekonomi*, 26(1), 153-169.
- Usman, B., Lestari, H. S., & Puspa, T. (2019). Determinants of capital adequacy ratio on banking industry: Evidence in Indonesia Stock Exchange. *Jurnal Keuangan dan Perbankan*, 23(3), 443-453.