



The Effect of ROE and NPM on ROA in Communication and Network Sector Companies in Indonesia

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Abstract

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This study aims to analyze the effect of Return on Equity and Net Profit Margin on Return on Assets in communication and network sector companies listed on the Indonesia Stock Exchange over the last five years. The research method used is a quantitative approach with multiple linear regression analysis using the IBM SPSS Statistics program. The research sample includes five companies, namely PT XL Axiata Tbk, PT Smartfren Telecom Tbk, PT Gihon Telekomunikasi Indonesia Tbk, PT Tower Bersama Infrastructure Tbk, and PT Axis Telekom Indonesia. The results showed that simultaneously ROE and NPM did not have a significant effect on ROA (Sig. value = 0.060 > 0.05). Partially, ROE had a negative and insignificant effect on ROA (Sig. = 0.078), while NPM had a positive but insignificant effect on ROA (Sig. = 0.064). A determination coefficient value (R^2) of 0.940 indicates that 94% of ROA variations can be explained by ROE and NPM. These results indicate that the efficiency of a company's assets is more influenced by structural and operational factors than by profitability ratios.



1. Introduction

The rapid advancement of information and communication technology in Indonesia over the last decade has accelerated the growth of the telecommunications and network industry (Faizah et al., 2021). Increasing internet data consumption, the expansion of 5G infrastructure, and high smartphone penetration have strengthened this subsector as a vital pillar of the national digital economy. Companies such as PT XL Axiata Tbk, PT Smartfren Telecom Tbk, PT Tower Bersama Infrastructure Tbk, and PT Gihon Telekomunikasi Indonesia Tbk operate in a highly competitive and capital-intensive environment that demands efficient asset utilization and prudent capital management to sustain profitability. As a result, financial efficiency has become a critical issue for firms in this industry.

Financial performance reflects a company's ability to manage its resources effectively to generate sustainable profits. One of the most widely used indicators of financial performance is Return on Assets (ROA), which measures management effectiveness in utilizing total assets to generate net income. ROA is particularly relevant for companies with large asset bases, as it shows how efficiently assets contribute to profit creation (Hartanto, 2023). In the telecommunications and network sector, where infrastructure investment and fixed assets dominate the balance sheet, improving ROA is a key strategic objective.

In addition to ROA, Return on Equity (ROE) and Net Profit Margin (NPM) are important indicators of profitability. ROE measures the company's ability to generate profit from shareholders' equity, while NPM reflects the proportion of net profit obtained from sales revenue. Both ratios are theoretically linked to ROA, as

capital efficiency and profit margins influence how effectively assets are converted into earnings. Empirical research on telecommunications companies listed on the Indonesia Stock Exchange during the 2020–2022 period found that ROE significantly affected financial performance (Purnama & Sari, 2022). The same study also reported that NPM had a meaningful influence, although the magnitude and direction of its effect varied across firms (Purnama & Sari, 2022).

Evidence from other sectors further illustrates inconsistencies in the relationship between ROE, NPM, and financial performance. Research on food and beverage companies listed on the IDX during the last five-year period showed that ROE positively influenced profit growth (Agustinus, 2021). The same study also found that NPM contributed positively, indicating that efficient capital utilization and strong profit margins supported higher earnings growth. These findings suggest a relatively stable and predictable relationship between profitability ratios in consumer-based industries.

However, contrasting results have been observed in other sectors. Research on transportation companies revealed that ROE had a positive effect on stock returns, while NPM did not significantly affect financial performance (Hidayat et al., 2022). Similar inconsistencies were identified in the pulp and paper subsector, where NPM showed a negative effect on firm value, whereas ROE remained significantly positive (Octavia & Rimawan, 2023). These mixed findings indicate that the impact of profitability ratios may depend on sectoral characteristics, cost structures, and market dynamics.

The telecommunications and network sector has unique characteristics, including high infrastructure costs, dependence on long-term investment, and revenue volatility driven by rapid technological change. These conditions may alter the relationship between ROE, NPM, and ROA compared to other industries. Despite the strategic importance of this sector, empirical studies that specifically examine the influence of ROE and NPM on ROA in Indonesian telecommunications companies using recent data up to 2023 remain limited. This lack of sector-specific and up-to-date evidence highlights a clear research gap.

Based on this background, the present study aims to empirically analyze the influence of Return on Equity and Net Profit Margin on Return on Assets in communication and network companies in Indonesia. This research is expected to provide updated empirical evidence regarding profitability dynamics in the telecommunications sector. Practically, the findings can assist management in formulating strategies to improve asset efficiency and profitability. Academically, this study may serve as a reference for future research by incorporating additional variables such as leverage or operational efficiency. Ultimately, the study seeks to determine whether ROE and NPM positively affect ROA in Indonesian communication and network companies over the past five years.

2. Literature Review

2.1. Effect of Return on Equity (ROE) on Return on Assets (ROA)

Return on Equity (ROE) is a key indicator that reflects a company's ability to generate profits from its own capital (Simanullang et al., 2021). This ratio measures

how effectively management utilizes shareholder equity to produce net income. ROE plays an important role in assessing internal capital efficiency, which can ultimately contribute to improved asset utilization and firm value (Hartanto, 2023). Theoretically, ROE is positively related to Return on Assets (ROA), as efficient capital management generally enhances the effectiveness of asset use. When equity is managed optimally, companies can increase net profits, which in turn improves ROA as an indicator of asset productivity. Empirical evidence supports this relationship. Research on telecommunication companies listed on the Indonesia Stock Exchange during the 2020–2022 period shows that ROE has a significant influence on profitability, indicating that well-managed equity directly contributes to higher asset performance (Purnama & Sari, 2022).

Similar findings are observed in other sectors. Research in the food and beverage industry demonstrates that ROE positively affects profit growth, suggesting that higher capital efficiency increases a firm's ability to generate returns from its assets (Agustinus, 2021). However, empirical results are not always consistent. In the transportation sector, ROE was found to positively influence stock returns, yet its impact on asset efficiency was not consistently significant across periods (Hidayat et al., 2022). These differences indicate that factors such as leverage, firm size, and cost structure may moderate the relationship between ROE and ROA. Conceptually, the positive relationship between ROE and ROA aligns with profitability–efficiency theory, which states that profits generated from equity reflect how efficiently assets are utilized, particularly when assets are largely financed by own capital.

Based on the theoretical foundation and empirical evidence that has been presented, the first hypothesis in this study is formulated as follows:

H₁: Return on Equity (ROE) has a positive effect on Return on Assets (ROA).

2.2. Effect of Net Profit Margin (NPM) on Return on Assets (ROA)

Net Profit Margin (NPM) is a profitability ratio that measures the amount of net profit generated from each rupiah of sales. This ratio reflects a company's ability to control operating costs and manage efficiency in transforming revenue into profit. NPM is an important indicator for both management and investors because it describes the level of net profitability that can influence asset utilization efficiency (Hartanto, 2023). From a theoretical perspective, a higher NPM indicates greater net profit relative to revenue.

Empirical evidence supports this argument. Research on telecommunication companies listed on the Indonesia Stock Exchange during the 2020–2022 period shows that NPM has a positive and significant effect on financial performance, including asset efficiency (Ihsan et al., 2023). These findings highlight that the ability to maintain optimal profit margins plays a crucial role in improving asset performance within the telecommunications sector. In transportation companies, NPM was found to have no significant effect on stock returns, suggesting that high profit margins do not automatically translate into efficient asset utilization when operating and fixed costs remain substantial (Saputra et al., 2023).

Similarly, research in the pulp and paper sector identified a negative relationship between NPM and firm value, indicating that cost volatility and production dynamics can weaken the positive impact of profit margins (Octavia &

Rimawan, 2023). These mixed findings indicate a research gap regarding the relationship between NPM and ROA, particularly in communication and network companies characterized by high infrastructure and technology investment costs. This condition underscores the need for further empirical analysis to better understand how net profit efficiency affects asset effectiveness in this sector.

Based on the theoretical description and the results of previous research, the second hypothesis in this study is:

H₂: Net Profit Margin (NPM) has a positive effect on Return on Assets (ROA).

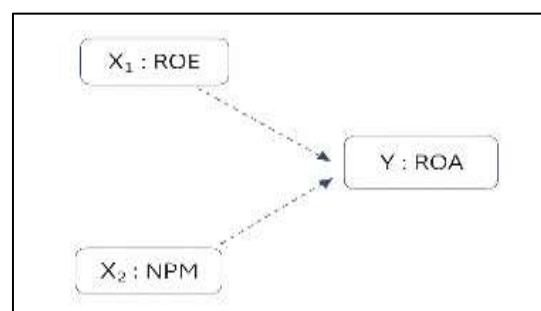


Figure.1 Conceptual Framework

Figure 1 illustrates a research model in which Return on Equity (ROE) is positioned as the first independent variable (X_1) and Net Profit Margin (NPM) as the second independent variable (X_2), both of which are assumed to influence Return on Assets (ROA) as the dependent variable (Y). The arrows pointing from ROE and NPM toward ROA indicate a proposed causal relationship, suggesting that a company's ability to generate profits for shareholders and its efficiency in earning

profits from sales are expected to contribute to the effectiveness of asset utilization in generating profits, either partially or simultaneously.

3. Methods

This study uses a quantitative approach with a descriptive-verifiable research type to analyze the influence of Return on Equity (ROE) and Net Profit Margin (NPM) on Return on Assets (ROA). The object of the research is focused on companies in the communication and network sectors listed on the Indonesia Stock Exchange (IDX) during the last five-year period.

The research population includes all communication and network sector companies listed on the IDX. The sample determination was carried out using purposive sampling techniques with the criteria of companies that are consistently registered during the observation period, publish complete annual financial statements, and have fully available ROA, ROE, and NPM data. Based on these criteria, the research sample includes PT XL Axiata Tbk, PT Smartfren Telecom Tbk, PT Gihon Telekomunikasi Indonesia Tbk, and PT Tower Bersama Infrastructure Tbk. The data used is secondary data sourced from the company's annual financial statements obtained through the official website of the Indonesia Stock Exchange and the website of each company. The dependent variable in this study is ROA, while the independent variable consists of ROE and NPM. All variables are measured using a ratio scale based on the calculation of net profit to total assets, equity, and net sales.

Data analysis was carried out using the Statistical Package for the Social Sciences (SPSS) which included descriptive statistical analysis, classical assumption testing, and multiple linear regression. Hypothesis testing was carried out through the t-test to determine the partial influence of each independent variable and the F-test to test the simultaneous influence, with a significance level of 5 percent. The determination coefficient is used to measure the model's ability to explain ROA variations. The results of the analysis are then interpreted by associating empirical findings with previous theories and research.

4. Results

This study applies multiple linear regression analysis to examine the effect of Return on Equity (ROE) and Net Profit Margin (NPM) on Return on Assets (ROA) in communication and network sector companies in Indonesia during the last five-year period. The analysis was performed using IBM SPSS Statistics to determine both the partial and simultaneous influence of the independent variables on the dependent variable.

Prior to conducting the regression analysis, classical assumption tests were carried out to ensure that the regression model met the requirements of the Best Linear Unbiased Estimator (BLUE). These tests include the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. The results of these tests indicate that the regression model fulfills the classical assumptions, allowing the analysis to proceed and ensuring that the estimated regression coefficients are reliable and valid for interpretation.

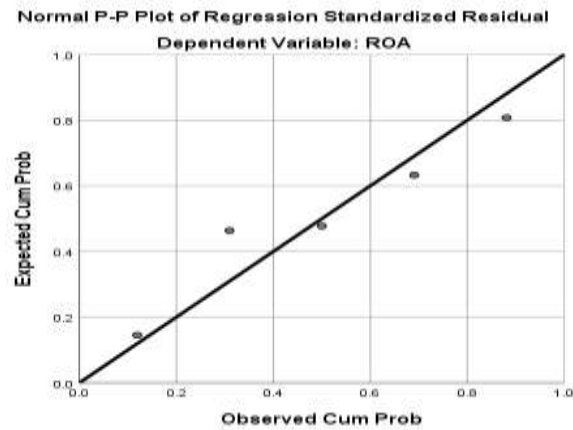


Figure.2 Output SPSS P-P Plot

Figure 1 show the results of the P–P Plot graph show the residual points spread around the diagonal line, indicating that the residual is normally distributed. Thus, the assumption of normality is met

Table 1. Results of Multicollinearity Test and Heteroscedasticity Test

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	23.394	14.804		1.580	.255		
	ROE	-5.209	1.546	-.595	-3.369	.078	.967	1.035
	NPM	.962	.256	.664	3.759	.064	.967	1.035
a. Dependent Variable: ROA								

Table 1. Multicollinearity Test The Tolerance value for ROE and NPM is 0.967, and the VIF value is 1.035, which means the Tolerance > 0.10 and the VIF < 10. This shows that there is no multicollinearity between independent variables. The test results showed that the significance value (Sig.) for ROE was 0.078 and NPM was 0.064, both greater than 0.05. This means that there is no heteroscedasticity, so the regression model meets the assumption of homoscedasticity.

Table 2. Autocorrelation Test Results

Model Summary^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.969 ^a	.940	.879	12.69633	1.180
a. Predictors: (Constant), NPM, ROE					
b. Dependent Variable: ROA					

Table 2 based on the results of the Durbin–Watson calculation of 1,180, there is an indication of mild positive autocorrelation, but due to the relatively small number of observations ($n = 5$), this condition is still tolerable. The pattern of point dispersion on the scatterplot also shows a relatively random distribution around the zero axis. Conclusion: The entire classical assumption test has been well fulfilled (except for a small amount of positive autocorrelation that is still within reasonable limits), so the regression model is feasible for hypothesis testing. Based on the output Coefficients in SPSS, the following regression results were obtained:

Tabel. 3 Output Coefficients

Coefficients^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	23.394	14.804		1.580	.255		
	ROE	-5.209	1.546	-.595	-3.369	.078	.967	1.035
	NPM	.962	.256	.664	3.759	.064	.967	1.035
a. Dependent Variable: ROA								

Results of the analysis Table 3. The regression shows that a constant value of 23.394 indicates that when the Return on Equity (ROE) and Net Profit Margin (NPM) are zero, then the Return on Assets (ROA) is estimated to be 23.394 percent. The ROE coefficient is negative of -5.209 which means that any increase in ROE of 1 percent will decrease the ROA by 5.209 percent assuming other variables in the model remain constant. Meanwhile, the NPM coefficient has a positive value of 0.962 which indicates that any increase in NPM of 1 percent will increase the ROA by 0.962 percent, assuming the other variables do not change.

Table.4 Test F

Statistics	Value
F	15.577
Say.	0.060

Table 4 Results. Showing a significance value (Sig.) of $0.060 > 0.05$, showing that simultaneously ROE and NPM do not have a significant effect on ROA. However, the relatively high F-value (15.577) and significance close to the 0.05 limit indicate that both variables have a potential for a shared influence on ROA, but are not statistically strong enough.

The results of the partial test (t-test) show that the Return on Equity (ROE) has a calculated t-value of -3.369 with a significance level of 0.078 which is greater than 0.05 . These results indicate that ROE does not have a significant effect on Return on Assets (ROA). Although the regression coefficient indicates the direction of a negative relationship, the increase in ROE is not statistically capable of improving ROA performance. This condition reflects that the increase in capital itself in telecommunications sector companies is not always followed by an increase in the efficiency of asset use, given the characteristics of a capital-intensive industry with the need for infrastructure investment and a relatively large cost burden.

Furthermore, the results of the t-test on Net Profit Margin (NPM) showed a calculated t-value of 3.759 with a significance level of 0.064 which is also greater than 0.05 . This indicates that NPM has no significant effect on ROA, although it has a positive relationship. These findings indicate that the increase in net profit margin has not been fully followed by the improvement in the efficiency of the company's asset management. Fluctuations in operational costs and high infrastructure investment are suspected to be the main causes of the suboptimal conversion of profits into more efficient asset performance.

Based on the results of the multiple linear regression test, simultaneously through the F test, a significance value of 0.060 was obtained, which is greater than the significance level of 0.05. These results show that Return on Equity (ROE) and Net Profit Margin (NPM) together do not have a significant effect on Return on Assets (ROA). Partially, the t-test results showed that ROE had a negative effect on ROA with a significance value of 0.078, which means that the effect was not statistically significant. Meanwhile, Net Profit Margin (NPM) shows a positive relationship with ROA, but the effect is also insignificant with a significance value of 0.064. These findings indicate that changes in ROE and NPM have not been able to conclusively explain the variation in ROA at the level of significance used. However, a determination coefficient value (R^2) of 94 percent indicates that the regression model has a high explanatory ability to explain ROA variations. However, the high R^2 value has not been followed by strong statistical significance, which is thought to be due to the relatively small number of observations ($n = 5$). Overall, the results of this study show that the relationship between ROE and NPM and ROA tends to be statistically weak, although economically it shows a positive relationship direction.

Therefore, these findings indicate the need to increase the number of samples and other relevant variables in the next study in order to obtain more robust and significant results. These results illustrate that the increase in ROE is not necessarily followed by an increase in ROA in telecommunications companies. This can be because the increase in capital itself has not been offset by the effectiveness of asset use, given the high burden on infrastructure and network investment. Meanwhile,

NPM has a positive relationship direction to ROA, which suggests that a company's ability to increase net profit from sales has the potential to improve asset efficiency. However, this effect has not been significant, which may be due to high operating costs and asset depreciation in the communications sector.

5. Discussion

The results of the partial test indicate that Return on Equity (ROE) has a negative coefficient value of -5.209 with a significance level of $0.078 (> 0.05)$. This finding shows that ROE has a negative and statistically insignificant effect on Return on Assets (ROA) in communication and network companies in Indonesia during the last five-year period. Therefore, H_1 , which states that ROE has a positive effect on ROA, is not empirically supported. This result implies that an increase in ROE is not necessarily followed by an improvement in asset utilization efficiency.

In such conditions, increases in equity are often allocated to infrastructure expansion and fixed asset investment that do not immediately generate net profit. Consequently, although ROE increases, ROA may decline in the short term due to the large asset base that has not yet produced proportional returns. According to Hartanto (2023), ROE should reflect management's ability to manage equity efficiently to generate profits that positively affect ROA. However, the findings of this study indicate a different empirical condition.

These results are consistent with the findings of Saputra et al. (2023), who reported that although ROE positively affects stock returns in the transportation sector, its effect on asset efficiency (ROA) is not statistically significant. This

phenomenon is influenced by differences in capital structure and high investment costs. In contrast, sectors such as food and beverage exhibit a positive relationship between ROE and profit growth due to faster asset turnover and shorter cash cycles (Agustinus, 2021). This comparison reinforces the conclusion that the effect of ROE on ROA is contextual and strongly influenced by industry characteristics, asset composition, and financing strategies.

The partial test results for Net Profit Margin (NPM) show a positive coefficient value of 0.962 with a significance level of 0.064 (> 0.05). This indicates that NPM has a positive but statistically insignificant effect on ROA. Thus, H_2 , which states that NPM has a positive effect on ROA, is not statistically accepted, even though the direction of the relationship aligns with theoretical expectations.

Empirical evidence from Ihsan et al. (2023) shows that NPM has a significant positive effect on the financial performance of telecommunication companies, indicating that higher net profit margins represent efficient cost management and improved asset productivity. However, in this study, the effect is not statistically significant. This discrepancy may be attributed to high fluctuations in operational costs and substantial depreciation expenses associated with fixed assets in the telecommunications industry. Large investments in network infrastructure and new technologies cause net profit growth to lag behind revenue growth, weakening the relationship between NPM and ROA (Umar et al., 2021). These findings align with the study of Utari (2023), which found that NPM negatively affected firm value in the pulp and paper sector due to high operational costs and volatile production expenses.

This indicates that the relationship between NPM and ROA is highly dependent on cost structure, operational efficiency, and industry conditions. Overall, the results show that both ROE and NPM do not have a statistically significant effect on ROA in communication and network companies during the study period. Nevertheless, the coefficient of determination ($R^2 = 0.940$) indicates that ROE and NPM jointly have strong explanatory power over variations in ROA, suggesting that their influence is economically meaningful despite being statistically weak. Managerially, these findings imply that companies need to balance equity financing strategies with operational efficiency and optimize the utilization of large fixed assets.

6. Conclusion

Based on the results of data analysis, hypothesis testing, and discussion, this study concludes that Return on Equity (ROE) and Net Profit Margin (NPM) simultaneously do not have a significant effect on Return on Assets (ROA) in communication and network sector companies in Indonesia over the last five years. This is indicated by the F-test significance value of 0.060 (> 0.05). However, the coefficient of determination (R^2) of 0.940 shows that ROE and NPM together explain 94% of the variation in ROA, indicating that their relationship with ROA is economically strong but statistically insignificant.

Partially, ROE has a negative coefficient value of -5.209 with a significance level of 0.078, meaning that ROE has a negative and insignificant effect on ROA. This suggests that increases in equity are not always followed by improvements in

asset utilization efficiency due to the high capital structure and investment burden characteristic of the telecommunications industry. Meanwhile, NPM has a positive coefficient value of 0.962 with a significance level of 0.064, indicating a positive but insignificant effect on ROA. This implies that although higher net profit margins tend to improve asset efficiency, the relationship is weakened by fluctuations in operating and investment costs.

Overall, the findings indicate that ROA is more strongly influenced by structural factors such as investment scale, leverage, and operational efficiency than by profitability ratios alone. These results highlight contextual differences across industries and reveal inconsistencies with previous studies that reported significant positive relationships between profitability ratios and asset performance.

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