# The Influence of ROA, ROE, NPM, and GPM on Stock Returns of Technology Companies Listed on the Indonesian Stock Exchange

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| Article Info | ABSTRACT |
|---|---|
| | This research examines the influence of Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), and Gross Profit Margin (GPM) on the stock returns of technology businesses listed on the Indonesia Stock Exchange. This analysis comprises all legally registered technological businesses listed on the Indonesian Stock Exchange from 2019 to 2022. Currently, the website idx.co.id displays about 43 technological businesses that have been officially registered. This study focuses on ROA) and NPM as crucial metrics for predicting stock returns in the technology industry. It specifically highlights the possibly negative impact of ROE. The minimal impact of GPM implies that investors may place more emphasis on evaluating possible stock returns in the technology sector using other metrics. It is advisable to do more analysis on the factors that influence returns in order to have a thorough comprehension. |

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## 1. INTRODUCTION

Indonesia's telecommunications sector has immense potential due to its large population and vast land area. According to the Central Statistics Agency, the use of technology is consistently increasing every year, further supporting this claim. The telecommunications industry is rapidly expanding, which has eliminated geographical barriers and reduced the gap in information accessibility between rural and urban areas. In 2020, the Coordinating Ministry implemented policies in response to the escalating transmission of COVID-19 within the country. The pandemic was declared a national disaster, and restrictions were imposed on external engagements and internet activities. As of 2023, Indonesia is in the recovery phase following three years of the pandemic, which has significantly impacted many industrial sectors. Telecommunications technology plays a crucial role in most actions, including those of technological corporations. According to data from the Central Statistics Agency, Indonesia has made notable advancements in the use and utilization of technology. The country's rapid technological development is evident from the fact that internet usage has increased to 78.18 percent in 2022. The increase in internet use may be ascribed to the expanding population of gadget users in Indonesia. Furthermore, ownership of technological

devices has also increased to 18.83 percent. The diagram below shows the increase in device usage from 2019 to 2022, providing a clear picture of the country's technological advancements.
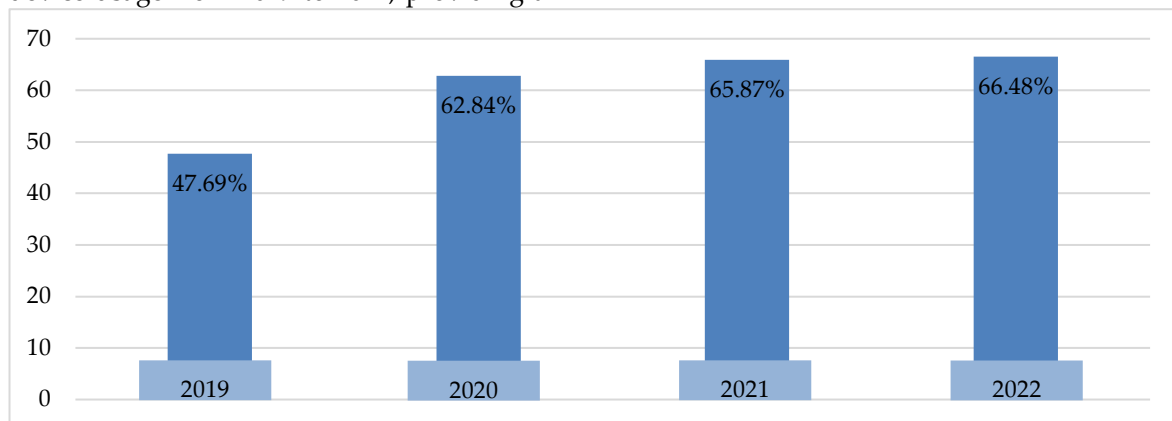


Figure 1. The Upward Trend in Technology Utilization From 2019 To 2022.
Source: Central Statistics Agency (Badan Pusat Statistik - BPS)

The proportion of individuals using the internet had a notable surge during 2019–2022. In 2022, 66.48% of the population accessed the internet, compared to 65.87% in 2021, 62.84% in 2020, and 47.69% in 2019. As the population continues to grow each year, it is clear that technology use is also on the rise. Figure 1 illustrates a significant surge in technology use from 2019 to 2020, with a 15.15% increase from 47.69% to 62.84%. However, from 2020 to 2022, technology use has remained constant. Amidst the COVID-19 outbreak in 2019, the stocks of technology companies were adversely affected by a mass selling action by investors, leading to a decline in their share values. However, it is important to note that this decline was not reflective of the increased use of technology that continued to trend upward every year despite the pandemic.

Technologies businesses traded on the Indonesia Stock Exchange have had their share prices fluctuate due to the effects of the COVID-19 pandemic. In 2019, the stock returns were recorded at -0.170, which increased to -0.037 in 2020. However, in 2021, the stock returns reached 1.389 but experienced a drastic decline to -0.411 in 2022. This decline was in contrast to the trend of significant increase observed between 2019-2020. There was a difference of 1.80 between the stock returns from 2021 to 2022. Despite the pandemic, it is predicted that activities will return to normal, and technology will continue to be implemented, as during the Work From Home (WFH) policy.

However, it is expected that the stock returns in 2022 will experience a drastic decline. According to CNBN's 2022 study, the IT industry had a sharp drop in stock returns because to the massive rise in issuance prices in 2021. This increase in issuer prices led to a rise in interest rates and operational costs that had an adverse impact on several issuers. As a result, many issuers witnessed declines, resulting in losses in 2022. Additionally, these increased costs also affected the calculation of financial ratios, such as the profitability ratio, as they were included in the financial reports.

Profitability ratios play a significant role for investors as they use investments to achieve profitability, according to [1]. Therefore, investors are mainly focused on analyzing profitability. In order to keep a firm from going bankrupt and increase dividends, they closely monitor both internal and external environmental factors. In this context, investors are mainly concerned with profitability ratios related to profit, profits, or profit. [2] has identified several indicators or types of profitability ratios, including ROA, ROE, NPM, and GPM. Both internal and external factors are considered by these indicators when assessing the company's profit generation capabilities.
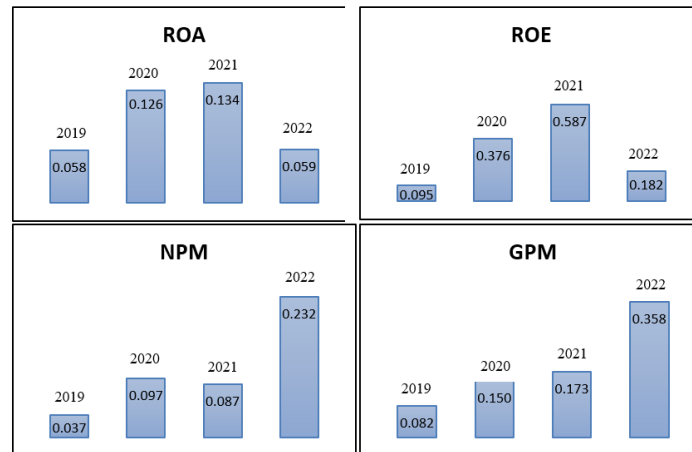
Figure 2. ROA, ROE, NPM, GPM
Source: Data processing, IDX (2023)

ROA and ROE follow a similar pattern. From 2019 through 2021, the graph shows a considerable upswing, and then from 2021 through 2022, it shows a precipitous downturn. The use of technology, on the other hand, led to a steady growth in NPM and GPM from 2019 through 2022. When looking at profitability ratio indicators, it's clear that net profit is used as a leveler by ROA and ROE, whereas total sales is used by NPM and GPM. These results show that ROA and ROE are connected to the changes in stock returns in 2021 and 2022, but NPM and GPM show a steady rise in technology advancements on an annual basis. An essential feature of this study is this distinction. A weakness of the study is that it has not yet verified the importance of each variable to the research aim. Researchers found gaps in the factors examined in this study in earlier studies. Research has shown that ROA, ROE, NPM, and GPM significantly and positively affect stock returns ([3] [4] [5] [6] [7]. At the same time, according to [7] [8] [9] and [10], the data show that ROA, ROE, NPM, and GPM do not significantly impact stock returns in a negative way. The researcher has decided to explore the impact of ROA, ROE, NPM, NPM, and GPM on stock returns of technology companies listed on the Indonesia Stock Exchange. This decision is based on the background information provided regarding the problems, phenomena, and predictions. Past research has shown that several of the factors used in

this study are missing. Previous studies have shown a strong positive correlation between ROA, ROE, NPM, GPM, and stock returns ([3] [4] [6] [7]). There is no substantial negative correlation between ROA, ROE, NPM, GPM, and stock returns, according to earlier research by [7], [8] [9], and [10]. We determined that the research objective would include analyzing the impact of ROA, ROE, NPM, NPM, and GPM on the stock returns of technology companies listed on the Indonesia Stock Exchange. This determination was based on the previous background information about the described problems, phenomena, and predictions.

## 2. LITERATURE REVIEW

The complex and aspect-dependent nature of the link between financial factors and stock returns has been recognized by several studies, calling for further research into the matter. In their empirical analysis, [8] found that after accounting for factors including EPS, NPM, ROA, and ROE, there was no statistically significant impact on stock returns. The converse is true according to a new research by [9], which found a positive correlation between ROA and stock returns. There was a negative association between stock returns and Return on Equity (ROE), Net Profit Margin (NPM), and Earnings per Share (EPS). Many variables, such as Return on Assets (ROA), Return on Equity (ROE), Net

Profit Margin (NPM), and Gross Profit Margin (GPM), considerably affect the performance of stock returns, according to a recent study by [4]Putri (2022). Based on their analysis of LQ45 companies listed on the Indonesian Stock Exchange from 2010 to 2013, [11] concluded that there was no statistically significant relationship between stock returns and Gross Profit Margin (GPM), Net Profit Margin (NPM), Return on Assets (ROA), Return on Equity (ROE), or Debt to Equity Ratio (DER). Finding a positive correlation between NPM and stock returns, [12] Trianingsih (2017) performed research. Nevertheless, there was no statistically significant link between ROE and DER. [6] found that financial metrics including ROA, ROE, EPS, and the price-to-earnings ratio (P/E) are positively correlated with stock returns. But there was no notable correlation found between stock returns and leverage ratios like DE and DAR. Many features linked to profitability and solvency indicators have a statistically significant and favorable effect on stock returns, according to the research done by [3]. The research by [13] found a favorable and statistically significant relationship between stock returns, ROA, ROE, and EPS. Findings from the study by [5] indicate a favorable correlation between stock returns and ROE and NPM. Return on assets (ROA) and profits per share (EPS) are inversely related, nevertheless. Still, there was no statistically significant relationship between DER and stock performance. [14] found that DPR, stock returns, and Return on Equity (ROE) are positively correlated. On the other side, the research found that EPS and Net Profit Margin (NPM) had a negative connection with stock returns. Empirical data from [11] showed a positive and statistically significant link between GPM, NPM, ROA, ROE, DER, and corporate returns. A recent research by [10] found that GPM and OPM are positively correlated with stock performance. There was a link, but it was determined to be statistically insignificant.

This study questions the prevalent models by analyzing their theoretical foundation, identifying their shortcomings, reviewing their results, and developing their core conceptual framework. X1, Return on Asset, X2, Net Profit Margin, and X4, Gross Profit Margin are the independent variables in this research. When one variable, the independent variable, changes, it impacts another variable, the dependent variable. For the sake of this analysis, stock return (Y) is the dependent variable.

*Hypothesis*

Based on previous studies conducted by [15] Parawansa et al. (2019), [16] [6] [11] and [8] it has been established that there is a positive correlation between ROA and stock returns. This means that as ROA increases, the productivity and effectiveness of a corporation also improve, resulting in a corresponding increase in stock returns. The relationship between these two variables is characterized by direct proportionality. Based on the findings of these studies, we can formulate the following hypothesis:

H1: There is a significant relationship between ROA and stock returns

It has been shown that the Return on Equity (ROE) variable affects stock returns in prior research by [9] [3] [8] and [10] According to the study's premise, a high return on equity (ROE) indicates a successful business. Stock prices rise as a consequence of investors realizing that corporations have more investment possibilities. Based on these results, we may test the following hypothesis:

H2: There is a significant relationship between ROE and Stock Returns.

The NPM variable is shown to affect stock returns according to prior studies by significantly [10] [11] [9] [5] [11] [8] and many more. A rise in a company's net profit margin is a sign of more efficient internal operations, which gives investors more faith in the company's capacity to expand their money. Better internal productivity should lead to greater stock returns as a consequence of a bigger net profit margin. Thus, one may build a hypothesis based on the aforementioned studies:

H3: There is a significant relationship between NPM and stock returns.

The influence of the GPM variable on stock returns has been demonstrated in past research conducted by [4] [3] [17] [7] [10] [11] as well as [8]. The Gross Profit Margin (GPM) is influenced by the operational activities undertaken by a corporation and the company's ability to generate profits. A corporation's commercial activities significantly impact investors' trust in allocating funds. Building trust can lead to an increase in stock returns. We can formulate a hypothesis that links the two based on these findings.

H4: There is a significant relationship between GPM and stock returns

## 3. METHODS

Our study will focus on a technology-oriented research organization listed on the Indonesian Stock Exchange. We will analyze financial reports on technical advancements between 2019 and 2022. This study encompasses all technical enterprises that are officially registered with the Indonesian Stock Exchange over the period from 2019 to 2022. The website idx.co.id now lists approximately 43 registered technology enterprises. This study utilizes data from companies that commenced their participation in 2018, as the computation of stock returns necessitates access to the preceding year's share price.

Table 1. Number Of Companies Joining The BEI

| Year of Company Joined | Number of Companies |
|---|---|
| Year < 2017 | 10 companies |
| Year 2018 | 13 companies |
| Year 2019 | 18 companies |
| Year 2020 | 22 companies |
| Year 2021 | 29 companies |
| Year 2022 | 34 companies |
| Year 2023 | 43 companies |

Source: IDX.co.id

A specific criterion for participant selection were included in the study's purposive sampling approach. First, all technology companies listed on the Indonesian Stock Exchange were considered. Second, technology companies that have been listed on the Indonesia Stock Exchange since 2018 and have uploaded their financial reports on time during the current research year were also considered. Third, technology companies that have published their financial reports and did not experience a decline from 2019 to 2022 (the period ending on December 31) were also considered. Specific criteria for participant selection were included in the study's purposive sampling approach. First, all technology companies listed on the Indonesian Stock Exchange were considered. Second, technology companies that have been listed on the Indonesia Stock Exchange since 2018 and have uploaded their financial reports on time during the current research year were also considered. Third, technology companies that have published their financial reports and did not experience a decline from 2019 to 2022 (the period ending on December 31) were also considered.

Table 2. a Specific Criteria for Participant Selection

| No | Sample criteria | Number of Companies |
|---|---|---|
| 1 | All technology companies listed on the Indonesian Stock Exchange | 35 |
| 2 | Businesses in the IT sector that have been listed on the Indonesia Stock Exchange since 2018 and have submitted their financial reports on time for the current study year | 13 |

| 3 | Technology companies that have published financial reports did not decline from 2019 to 2022, which ended on December 31. | 11 |
|---|---|---|
| **Number of research sampling** | | **11** |

This study examined 11 companies over a research period spanning from 2019 to 2022, resulting in a sample size of 44 data points for analysis.

This study is being conducted using stock returns as the variable. The expected demand of a trader is often shown by stock returns. In the context of an investing plan, a stock return is the interest that an investor gets from the interest of his shares. Following are the steps that [18] and [19] recommend to determine the return share:

$$R_t = \frac{R_t - P_{t-1}}{P_{t-1}}$$

The asset's price at the end of a particular month, when it is not generating any revenue, is represented by the variable Pt. At the end of month t-1, the variable Pt-1 reflects the price.

In this analysis, the profitability ratios serving as independent variables are ROA, ROE, NPM, and GPM. An efficient method to depict the asset-based capabilities of a company that emerge from its innovation endeavors is the ROA ratio, asserts [20]. Gains in profit per unit of currency asset are not always proportionate to increases in asset-related activity. The asset contributions that are critical to producing net income are highlighted by the ratio. Several authors, including [21] [22] and [19] have addressed the ROA formula.

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

When evaluating a company's financial health, the ROE measure is crucial. If the number of positive outcomes is large, it means that the firm is good at making the most of its money. Discussion centers on the idea of risk management. Currently, people are talking about ROE, or return on equity. The following information has been supplied by the authors [23], [23] [24] and [25].

$$ROE = \frac{Net\ Income}{Total\ Equity}$$

Net Profit Margin (NPM) is defined as the relationship between an established laboratory and specialized expertise, according to research by [26]. Meanwhile, according to [19] one useful indicator for tracking the net profit earned by ongoing transactions is the Net Profit Margin (NPM). Investors have more faith in profitable endeavors that adequately protect their capital as the net profit margin (NPM) rises, which indicates better internal operational performance within the company. According to [27] [26] (2018), and [19] the following is the method for determining the net profit margin:

$$NPM = \frac{Net\ Income}{Total\ Sales}$$

GPM is a measure of a company's financial performance that measures the amount of revenue that remains after deducting the cost of goods sold ([19]). When spending goes through unpredictable swings, this statistic comes into its own. The difference between the selling price of items and the price set during the same time is called the gross profit margin. A greater number of investors are likely to show interest in purchasing the company's shares, which might cause the share price to rise. The stock price of a company is likely to grow in tandem with its total financial assets if the former shows a daily increase. According to [24], [25] and [19] the following is the method for determining the Gross Profit Margin:

$$GPM = \frac{Revenue - Cost\ of\ Goods\ Sold}{Revenue}$$

The purpose of conducting a regression analysis on this panel data is to examine the interrelationships between various individual variables, including ROA, ROE, NPM, and GPM, about the returns of technology

company shares. The equation for the panel data model in this study is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

Note: Y: Stock Return: $X1$ = ROA, $X2$ = ROE, $X3$ = NPM, $X4$ = GPM, e = (error term), i = Object (Company), t = Time (2019-2022).

## 4. RESULTS AND DISCUSSION

### 4.1 Descriptive Statistical Analysis

After conducting a statistical analysis, it was found that there were 44 data points in the research data set of technology businesses listed on the Indonesian Stock Exchange from 2019 to 2022.

Table 3. Descriptive statistics

|            | RS     | ROA    | ROE   | NPM   | GPM   |
|------------|--------|--------|-------|-------|-------|
| Mean       | 0.192  | 0.095  | 0.310 | 0.113 | 0.175 |
| Maximum    | 3.943  | 0.536  | 4.860 | 1.618 | 1.080 |
| Minimum    | -0.880 | 0.0002 | 0.002 | 0.001 | 0.007 |
| Std. Dev.  | 1.022  | 0.113  | 0.792 | 0.274 | 0.263 |

Table 2 conducts a descriptive analysis of stock returns. In 2019, PT Kioson Komersial Indonesia Tbk had a minimum value of -0.880, as indicated by the data distribution. In 2021, PT Multipolar Technology Tbk had a maximum value of 3.943. The company also reported an average value of 0.192 and a standard deviation of 1.022. This implies that the magnitude of stock returns can be assessed by examining the disparity between the mean and maximum values. In light of the proximity between the average value and standard deviation, it is noteworthy that the data variance is relatively minimal.

An analysis of descriptive statistics is provided in the ROA section. In 2021, PT Anabatic Technology Tbk and PT Sentral Mitra Informatika Tbk both had a return on assets (ROA) of 0.0002. PT Distribusi Voucher Nusantara Tbk achieved the peak value in 2021, when it reached 0.536. With a standard deviation of 0.113, the mean value was found to be 0.095. That means the ROA isn't very big when compared to the average and maximum numbers. Additionally, since the average value is so close to the standard deviation, the data variance is quite minimal. In 2021, PT Anabatic Technology Tbk reached a peak of 4.860 in the ROE sector, while PT Sentral Mitra Informatika Tbk reached a minimum of 0.002. With a standard deviation of 0.792,

the Return on Equity (ROE) variable was found to have an average value of 0.310. What this means is that the ROE variable is much bigger than normal, and thus the maximum ROE value is much higher than usual as well. The closeness of the average and standard deviation, however, indicates that the data distribution has a low variance. According to the descriptive analysis data in the NPM section, PT Kioson Dagang Indonesia Tbk achieved a minimum data distribution value of 0.001 in 2019. The highest recorded value was 1.618 PT Elang Mahkota Teknologi Tbk in 2022. The mean value was calculated as 0.113, with a corresponding standard deviation of 0.274. This implies that the size of the NPM is relatively tiny when considering its average value, which is closely aligned with the highest value. Additionally, the variance in the data distribution is likewise small due to the proximity of the average value and standard deviation.

Looking at the data from the GPM section, we can see that in 2020, PT Kioson Dagang Indonesia Tbk had the lowest value of 0.007 in the distribution. However, in 2020 and 2021, PT Sentral Mitra Informatika Tbk reached the peak value of 1.080. With a standard deviation of 0.263, the computed mean value was 0.175. In comparison to the average and maximum values, the GPM is quite low, as seen above. Also, when looking at the

average and standard deviation, the data distribution reveals very little fluctuation.

### 4.2 Panel Data Regression

**a. Chow Test**

According to [28], the Chow test is to determine whether the common effect or fixed effect model is better to apply. When the p-value linked with the Chi-square statistic is less than 0.05, the null hypothesis (H0) is rejected in the Chow test, which is a statistical test. On the other hand, H0 is accepted when the p-value is equal to or higher than 0.05. The Fixed Effects Model (FEM) is selected as the effect model in the event that the null hypothesis (H0) is rejected.

Table 4. Chow Test

| Redundant Fixed Effects Tests | | | |
|---|---|---|---|
| Equation: Untitled | | | |
| Test cross-section fixed effects | | | |
| **Effects Test** | **Statistic** | **d.f.** | **Prob.** |
| Cross-section F | 0.666 | (10,29) | 0.745 |
| Cross-section Chi-square | 9.100 | 10 | 0.522 |

The aforementioned information points to a chi-square probability value of 0.5225, which is consistent with accepting the null hypothesis (H0). The CEM, or Common Effect Model, will be used to describe the outcomes of this experiment.

**b. Hausman Test**

When doing empirical research, the Hausman test is often used to help decide between the fixed effects model (FEM) and the random effects model (REM). When the probability value is less than 0.05, the null hypothesis (H0) is rejected according to the Hausman test. On the other hand, if the probability value is higher than 0.05, it is not rejected. After the rejection of the null hypothesis (H0), the Fixed Effects Model (FEM) is selected as the effect model.

Table 5. Hausman Test

| Correlated Random Effects - Hausman Test | | | |
|---|---|---|---|
| Equation: Untitled | | | |
| Test cross-section random effects | | | |
| **Test Summary** | **Chi-Sq. Statistic** | **Chi-Sq. d.f.** | **Prob.** |
| Cross-section random | 3.827 | 4 | 0.429 |

With a probability value of 0.4299, as shown in the table, we may accept the null hypothesis (H0). Here, we're using the Random Effect Model (REM) as our test model. It is unnecessary to do the Lagrange Multiplier test if the FEM test is chosen from the two tests mentioned above.

**c. Lagrange Multiplier Test**

When deciding between the two competing models—the Common Effect Model (CEM) and the Random Effects Model (REM)—the Lagrange Multiplier Test is often used. The above table shows the results of the Lagrange Multiplier test, which states that a Breusch-Pagan Cross Section value less than 0.05 is required to reject the null hypothesis (H0). Alternatively, if the value is more than 0.05, it is not rejected. After rejecting the null hypothesis (H0), the Random Effect Model (REM) is selected as the effect model.

Table 6. Lagrange Multiplier Test

| Lagrange Multiplier Tests for Random Effects |
|---|
| Null hypotheses: No effects |
| Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided |

| (all others) alternatives | | | |
|---|---|---|---|
| | **Test Hypothesis** | | |
| | **Cross-section** | **Time** | **Both** |
| Breusch-Pagan | 0.885 | 0.004 | 0.889 |
| | (0.346) | (0.945) | (0.345) |

The table above indicates that the Breusch-Pagan Cross Section value is 0.346, suggesting that the null hypothesis (H0) is accepted. The selected model for this experiment is the Common Effect Model (CEM). The selection of an appropriate regression model for this research is contingent upon using test data.

In this context, the Common Effect Model (CEM) is the most appropriate. The output of CEM is presented below:

Table 7. Output of Common Effect Model (Best Model)

| Dependent Variable: Return Saham | | | | |
|---|---|---|---|---|
| Method: Panel Least Squares | | | | |
| Sample: 2019 2022 | | | | |
| Periods included: 4 | | | | |
| Cross-sections included: 11 | | | | |
| Total panel (balanced) observations: 44 | | | | |
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| C | -0.328 | 0.105 | -3.113 | 0.003 |
| ROA | 2.825 | 0.715 | 3.949 | 0.000 |
| ROE | -0.694 | 0.385 | -1.799 | 0.079 |
| NPM | 4.073 | 2.149 | 1.894 | 0.065 |
| GPM | -0.308 | 0.485 | -0.636 | 0.528 |
| R-squared | 0.307 | Mean dependent var | | -0.134 |
| Adjusted R-squared | 0.236 | S.D. dependent var | | 0.403 |
| S.E. of regression | 0.352 | Akaike info criterion | | 0.859 |
| Sum squared resid | 4.845 | Schwarz criterion | | 1.061 |
| Log likelihood | -13.898 | Hannan-Quinn criter. | | 0.934 |
| F-statistic | 4.326 | Durbin-Watson stat | | 2.120 |
| Prob(F-statistic) | 0.005 | | | |

**d. Blue Test**

In the context of panel data regression, it is pertinent to note that not all traditional assumption tests employed in the ordinary least squares (OLS) approach are utilized. Specifically, only the assessment of multicollinearity and heteroscedasticity is deemed necessary.

**e. Multicollinearity Test**

Table 8. Multicollinearity Test (VIF)

| **Variable** | **Centered VIF** |
|---|---|
| C | NA |
| ROA | 1.642 |
| ROE | 1.777 |
| NPM | 1.287 |
| GPM | 1.105 |

Based on the findings mentioned above, the Centered VIF for ROA is 1.164, the ROE is 1,777, the NPM is 1,287, and the GPM is 1.105. It is important to note that each of these variables has a VIF value of less than 10, indicating that multicollinearity is not present in this particular study. The research data is highly reliable, making it suitable for further investigation and capable of

providing consistent and predictive outcomes.

**f.  Heteroscedasticity Test**

Table 9. Heteroscedasticity Test

| Heteroskedasticity Test: Glejser | | | |
|---|---|---|---|
| Null hypothesis: Homoskedasticity | | | |
| F- Statistic | 1.747 | Prob. F(4,39) | 0.159 |
| Obs*R-square | 6.688 | Prob.Chi-Square (4) | 0.153 |
| Scaled explained SS | 4.789 | Prob.Chi-Square (4) | 0.309 |

Evident from the preceding output, the offered study data shows consistent residual variations over several observations. Distinct monuments will always have their own unique characteristics. In this case, we accept H0 as true since the chi-square probability is higher than the preset significance threshold (alpha = 0.05). Therefore, homoscedasticity is present in the data that was obtained, according to the study results.

**g.  Hypothesis Testing**

Table 10. T-Test, F-stat, and Variable

| T-test | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **T-statistic** | **Probability** | **Note** |
| Constant | -0.328 | -3.113 | 0.003 | Significant |
| ROA | 2.825 | 3.949 | 0.000* | Significant |
| ROE | -0.694 | -1.799 | 0.079** | Significant |
| NPM | 4.073 | 1.894 | 0.065** | Significant |
| GPM | -0.308 | -0.636 | 0.528 | Not Significant |
| **F-stat** | | | | |
| **Variable** | | **F-statistic** | **Probability** | **Note** |
| ROA, ROE, NPM, GPM | | 4.326 | 0.005 | Significant |
| **R2 Test** | | | | |
| **Variable** | | **R-squared** | | |
| ROA, ROE, NPM, GPM | | 0.307 | | |

The F-test result of 4.326 was higher than the F-table critical value of 2.84. The 0.05 level of significance is higher than the 0.005 level, on the other hand. Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), and Gross Profit Margin (GPM) are seen to have a substantial impact on stock returns, leading to the rejection of the null hypothesis (H0) and the acceptance of the alternative hypothesis (H1). Furthermore, parameters like ROA, ROE, NPM, and GPM are responsible for around 30.70 percent of the variance in stock returns, according to the R2 test findings. It should be emphasized that additional factors not included in this empirical model account for the remaining 69.30% of the significance.

ROA has a major effect on stock returns. The ROA variable produced a t-count of 3.949 and a positive coefficient value of 2.825, as described in the hypothesis test description above. What this means is that stock returns will improve by 2.825 percentage points for every 1% increase in ROA. The calculated probability of 0.000 is lower than the established 0.05 threshold of significance. I reject the null hypothesis (H0) and embrace the alternative hypothesis (H1). This indicates that there is a statistically significant influence present. According to several prior studies conducted by [9] [4], [6], [3] [29] and [7]Afinanda (2015), it has been established that the variable of ROA exhibits a statistically significant and beneficial impact on stock returns.

The ROA diagram depicting Stock Returns shows a consistent trend, a gradual increase from 2019 to 2021, followed by a significant decrease in 2022. The assertion is substantiated by a report from CNBC (2022), which posits that the decline in the technology industry can be attributed to rising costs that impact financial statements, influencing the computation of profitability metrics. According to [1], the determination of return on assets involves the utilization of a profitability ratio formula to assess a firm's effectiveness in creating profits through the optimal utilization of its assets. A positive ROA signifies the company's ability to make profits from its operational assets. Based on the argument above, it can be posited that the variable of ROA can elucidate both the decline and ascent in stock returns, owing to its positive and statistically significant impact on such returns. During the period from 2019 to 2022, technological businesses have the potential to optimize the utilization of various corporate assets effectively.

According to the study's findings, ROE is a key factor influencing stock performance. Using a t-count of -1.799 and a negative coefficient value of -0.694, the ROE variable was found to be significant in a hypothesis test. In other words, a 1% drop in ROE causes a -0.694 drop in stock returns. We accept the alternative hypothesis (H1) and reject the null hypothesis (H0) since the probability value of 0.079 is less than the significance threshold of 0.10 (with $\alpha= 0.10$). So, return on equity has a negative impact on stock performance, and it's statistically significant. In the background, the ROE diagram with Stock Returns shows a consistent trend, characterized by a gradual increase from 2019 to 2021, followed by a significant decrease in 2022. This contradicts the belief that there is a correlation between ROA and ROE and stock performance. It should be noted that the ROE has a detrimental impact on stock performance, unlike the ROA which

has a favorable effect. According to [30] study, a rise in ROE indicates the company's competence in effectively managing assets and equity. If the ROE number is high and has the potential to significantly rise, it may be concluded that the firm is a good investment. However, investors will be less inclined to show interest if they are aware that the impact of this ROE variable is negative. Despite earlier studies done by [12], [11] [9], and [8] showing that the variable of Return on Equity (ROE) has a notable and adverse impact on stock returns, the agreement with the findings of prior studies is inconclusive. Upon closer examination, the root cause of this issue may be attributed to the company's excessive debt outweighing its income. This might be determined by computing the aggregate quantity of equity that surpasses the earnings of the technological firms under examination. Overall, the findings of this study indicate that ROE does indeed have an impact on Stock Returns, although in a negative manner. The ROE may be used to characterize the stock performance of technology businesses, but investors will be less inclined to show interest if they are aware that the impact of this ROE variable is negative.

The effect of NPM on stock returns is substantial. The NPM variable had a positive coefficient value of 1.894 and a t count of 4.073 according to the hypothesis test. So, if NPM goes up by 1%, stock returns will be up by 1.894. We may accept the alternative hypothesis (H1) and reject the null hypothesis (H0) since the probability value of 0.065 is less than the significance threshold of 0.10 (with $\alpha= 0.10$). It may be concluded that there is a favorable and statistically significant effect. The background explanation clarifies that NPM and GPM exhibit continuity due to their same diagram pattern, which involves a linear growth from 2019 to 2022. This pattern aligns with the upward trend in technology use throughout the same time period.

However, unlike the findings of this research, the two variables are not aligned. The variable that is affected by the rising use of technology is just the NPM variable, but the GPM variable has no impact. [30] states that NPM may assess the degree of operational efficiency and the company's capacity to control expenses. The study findings indicate that NPM has a favorable and substantial impact on stock returns. This is due to the company's ability to produce profits through comprehensive cost analysis, optimizing operational efficiency by reducing expenses and enhancing overall profitability. Consequently, the increase in investor confidence will lead to a corresponding rise in stock prices and returns. According to [14] [11], [9] and [8], prior research has shown that the NPM variable has a considerable impact on stock returns. This indicates that the NPM variable may represent the Stock Return variable. Raising the NPM will enhance the company's productivity, leading to a rise in stock returns. By demonstrating improved efficiency in its internal processes, NPM may effectively bolster investor trust. Consequently, the value of shares will rise, leading to an increase in returns.

In terms of stock returns, GPM is insignificant. As mentioned earlier in the hypothesis test explanation, the GPM variable had a t-count of -0.636. There is no substantial impact since the probability value is 0.528 > 0.05, which means that H0 is accepted and H1 is denied. [30] asserts that GPM significantly impacts stock returns. The gross profit margin (GPM) is defined as the percentage of sales that remains after deducting operating expenses ([30]. Lower manufacturing costs are a direct result of an increase in gross profit. Contrary to what one may expect, this research found no correlation between GPM and stock returns. Since the gross profit value is far lower than that sales value, GPM has no effect on stock returns. Given this context, it should be clear that,

as technology advances, the diagram patterns of GPM and NPM are becoming more similar. Having said that, GPM alone does not impact stock returns in any meaningful way. Since the probability value was 52.8%—quite high and meaningless—this was discovered via the t-test. As a result, technology company stock returns cannot be described by the GPM variable. [31] [32] and [33] among others, found no relationship between the GPM variable and stock returns. What this The Stock Return variable defies description by the GPM variable. Despite this, investors often use profitability measures (ROA, ROE, NPM, and GPM) as a yardstick when evaluating whether or not to purchase a company's shares ([30] [1]).This study's findings, however, show that GPM is unable to characterize stock returns. Nonetheless, the three other factors examined do impact stock returns, as investors can see.

## 5.   CONCLUSION

The research demonstrates that ROA positively affects stock performance, but ROE has a more negative effect. Technology businesses may boost their stock performance by focusing on maximizing their assets, enhancing debt management, and doing a full examination of the factors that determine net and gross profit. Return on assets (ROA) may be increased via prudent investment and the enhancement of operational efficiency. Debt restructuring and capital adjustments are two ways in which companies may enhance their return on equity (ROE) management. Investors may take notice of their improved equities management skills as a result of this. In order to properly comprehend their function in stock performance, more investigation into Gross Profit Margin (GPM) and Net Profit Margin (NPM) is necessary. Additional factors that could impact stock performance should also be carefully considered and investigated. The relationship between these metrics and stock performance may be further understood by adding more factors to the analysis beyond ROA, ROE,

NPM, and GPM. A deeper comprehension of
the elements influencing stock performance
allows for more educated decision-making.

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