

The Effect Of Operating Costs, Capital Structure And Liquidity On Profitability In Companies In The Processed Food Subsector Listed On The Indonesian Stock Exchange (BEI) For The Period 2021–2025

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Abstract

This study aims to analyse the impact of operating costs, capital structure and liquidity on profitability in companies in the Food and Beverage sub-sector listed on the Indonesia Stock Exchange (IDX) for the period 2021–2025. Profitability is measured using Return on Assets (ROA), operating costs are measured by the Operating Expenses to Operating Revenue ratio (BOPO), capital structure is measured by the Debt to Equity Ratio (DER), and liquidity is measured by the Current Ratio (CR). This study employs a quantitative approach using secondary data in the form of annual financial statements, comprising 140 observations (firm-years) from 28 companies. The analysis method employed was multiple linear regression. The results indicate that, when considered individually, operating costs (BOPO) have a positive and significant effect on ROA, capital structure (DER) has a positive and significant effect on ROA, whilst liquidity (CR) has a positive but insignificant effect on ROA. When considered simultaneously, all three variables have a significant effect on profitability.

Keywords: Operating Costs, Capital Structure, Liquidity, Profitability.

JEL Codes: D24, G32, G33

1. Introduction

Companies in the Food and Beverage sub-sector face a number of issues that can affect profitability, including operational efficiency and profitability stability ([Pratiwi & Wahyono, 2023](#)). A company's ability to control operating costs, manage its capital structure, and maintain liquidity levels are key factors that can determine its level of profitability.

Profitability is one of the indicators used to assess a company's financial performance. Similarly, operating costs are a key factor that directly influences the amount of profit generated. Research by [Karmilah et al. \(2024\)](#) found that operating costs simultaneously have a significant effect on net profit on sales in companies within the Food and Beverage sub-sector listed on the Indonesia Stock Exchange (IDX). This is also stated by [Sari & Nurdiansyah \(2024\)](#), who demonstrated that the operating cost-to-revenue ratio (BOPO) has a significant negative effect on profitability (ROA), confirming the negative relationship between operational cost efficiency and profitability. [Kasmir \(2019\)](#) explains that the lower a company's ratio of operating costs to operating revenue,

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the more efficient it is at managing its resources to generate profit; thus, conceptually, the operating cost-to-revenue ratio (BOPO) has a negative relationship with profitability, as measured by ROA. A similar view was put forward by [Munawir \(2014\)](#), who stated that the control of operating costs is one of the main determinants of a company's profitability, as any increase in operating expenses that is not offset by a proportional increase in revenue will erode the company's operating profit margin.

In addition to operating costs, capital structure is also important in determining a company's profitability. According to [Brigham and Houston \(2019\)](#), the use of debt can increase profitability through financial leverage; however, excessive use of debt actually increases financial risk, thereby reducing profitability. Consequently, the relationship between the Debt-to-Equity Ratio (DER) and Return on Assets (ROA) is not always linear and depends heavily on the extent to which a company is able to manage that debt productively. Research by [Sabakodi & Andreas \(2024\)](#) demonstrates that the Debt-to-Equity Ratio (DER) has a positive and significant effect on profitability (ROA) for companies listed on the Indonesia Stock Exchange (IDX) between 2019 and 2022. Similarly, research conducted by [Pujia et al. \(2026\)](#) indicates that capital structure and liquidity simultaneously have a significant impact on profitability. However, based on partial tests, only capital structure has a significant impact on profitability, whilst liquidity does not have a significant effect.

Another factor is liquidity. [Hanafi and Halim \(2016\)](#) state that a current ratio that is too high may indicate the presence of idle current assets that are not being managed productively, which may in turn reduce the company's profitability; conversely, a current ratio that is too low reflects liquidity risk that may disrupt operational smoothness and ultimately also constrain the company's ability to generate profits. Research by [Novita et al. \(2022\)](#) examined the effect of the current ratio (CR) on ROA in food companies listed on the Indonesia Stock Exchange (IDX) for the period 2017–2020 and found that the CR, together with other financial ratios, had a positive effect on ROA.

As an initial finding that underscores the need for further research, the following presents data on BOPO, DER, CR and ROA for three companies in the processed food sub-sector listed on the Indonesia Stock Exchange (IDX) over the last three years (2023–2025), namely PT Indofood CBP Sukses Makmur Tbk (ICBP), PT Mayora Indah Tbk (MYOR), and PT Ultra Jaya Milk Industry & Trading Co Tbk (ULTJ).

Table 1. BOPO, DER, CR and ROA Figures for The Three Sample Companies for The Period 2023–2025

Company	Year	BOPO	DER (x)	CR (x)	ROA
PT Indofood CBP Sukses Makmur Tbk (ICBP)	2023	0,78	0,92	3,51	7,10
	2024	0,68	0,88	4,09	6,99
	2025	0,66	0,84	4,15	7,94
PT Mayora Indah Tbk (MYOR)	2023	0,96	0,56	3,67	13,59
	2024	1,12	0,74	2,65	10,32
	2025	1,28	0,71	3,38	9,27
PT Ultra Jaya Milk Industry & Trading Co Tbk (ULTJ)	2023	0,85	0,13	5,27	15,77
	2024	1,16	0,14	4,71	13,64
	2025	0,80	0,11	6,59	14,89

Source: Data processed by the author, 2026

Table 1 shows that the relationship between BOPO, DER, CR and ROA does not yet exhibit a consistent pattern. In the ICBP, a decrease in BOPO is followed by an increase in ROA, whereas

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in the MYOR, an increase in BOPO is consistently followed by a decrease in ROA. On the other hand, the relationship between DER and ROA varies across companies, whilst CR tends to have a positive relationship with ROA, although this is not always consistent. These findings indicate that the influence of each financial ratio on profitability remains context-dependent, thus requiring empirical testing using the entire research sample.

Previous research into the impact of the Current Ratio (CR) and Debt-to-Equity Ratio (DER) on ROA in the food and beverage sector has yet to yield consistent findings. A study conducted by [Pratiwi et al. \(2022\)](#) on food and beverage companies listed on the Indonesia Stock Exchange (IDX) for the period 2014–2018 found that, when considered individually, the Current Ratio (CR) and Debt-to-Equity Ratio (DER) did not have a significant effect on Return on Assets (ROA); however, when considered simultaneously, both variables had a significant effect on ROA. This finding indicates that a company's ability to manage liquidity and capital structure in tandem can influence profitability, even though each variable individually does not have a significant effect. In contrast, research by [Fianti et al. \(2022\)](#) found that the Current Ratio (CR) had a significant effect on Return on Assets (ROA), with a coefficient of determination of 56.7 per cent. These results indicate that the Company's ability to manage liquidity plays a key role in enhancing profitability.

The main studies cited as references for the independent variables in this research are the study by [Karmilah et al. \(2024\)](#), which focuses on the effect of operating costs on net profit from sales in the food and beverage sector; the study by [Sabakodi and Andreas \(2024\)](#), which examines the effect of capital structure (DER) on profitability in manufacturing companies; and the study by [Novita et al. \(2022\)](#), which analysed the effect of liquidity (CR) on ROA. These three studies generally tested the variables separately, using different research subjects and time periods, which has led to inconsistencies in the research findings. Therefore, this study integrates these three variables into a single empirical model for companies in the processed food sub-sector listed on the Indonesia Stock Exchange for the period 2021–2025.

This study aims to analyse the impact of operating costs (BOPO), capital structure (DER) and liquidity (CR) on profitability (ROA), both partially and simultaneously, as well as to provide empirical evidence regarding the factors influencing the profitability of companies in the processed food sub-sector in Indonesia. It is hoped that this study will make an empirical contribution to explaining the inconsistencies in previous research findings whilst enriching the literature on the determinants of corporate profitability.

2. Literature review

2.1 Trade-Off Theory

The Trade-Off Theory, introduced by [Kraus and Litzenberger \(1973\)](#), explains that companies determine their optimal capital structure by balancing the benefits of using debt—in the form of a tax shield—against the costs arising from debt utilisation, such as financial distress costs and agency costs. This theory was subsequently developed by [Jensen and Meckling \(1976\)](#), who asserted that the use of debt can increase a firm's value provided that the benefits outweigh the costs incurred. From the perspective of the Trade-Off Theory, a firm will continue to increase its use of debt until it reaches the optimal capital structure. At that level, the tax-saving benefits of debt are equivalent to the bankruptcy costs and agency costs borne by the firm ([Setianingtiyas & Gantino, 2022](#)). Therefore, the relationship between the debt-to-equity ratio (DER) and profitability is not always linear; rather, it depends on a company's ability to manage its leverage optimally. In this study, the Trade-Off Theory is used as the theoretical framework to explain the

relationship between capital structure—proxied by the Debt to Equity Ratio (DER)—and profitability—proxied by Return on Assets (ROA). The more optimally debt is utilised within the capital structure, the greater the company's chances of increasing profitability. Conversely, the use of debt exceeding the optimal level can increase financial risk, thereby reducing profitability.

2.2 Profitability

Profitability is a company's ability to generate profits at a given level of sales, assets and share capital. [Kasmir \(2019\)](#) explains in his book that profitability ratios are used to assess a company's ability to generate profits, whilst also providing an indication of the effectiveness of a company's management in carrying out its operational activities. [Putri & Munfaqiroh \(2020\)](#) state that profitability is one of the most important indicators for measuring a company's financial performance through financial ratio analysis. [Jannah et al. \(2020\)](#) state that profitability is influenced by the efficiency of operating costs, capital structure, and a company's liquidity. The study indicates that operating costs have a significant impact on profitability, whilst capital structure and liquidity yield varying results depending on the company's characteristics. In this study, profitability is measured using Return on Assets (ROA).

2.3 Operating Costs

Operating costs are all costs incurred by a company in carrying out its core business activities, excluding the cost of goods sold (COGS). [Kasmir \(2019\)](#) states that the lower a company's ratio of operating costs to operating revenue, the more efficient that company is at managing its resources to generate profit. ([Karmilah et al., 2024](#)) found that operating costs have an impact on net profit in Food and Beverage companies listed on the Indonesia Stock Exchange (BEI). According to [Mustika et al. \(2023\)](#), operating cost efficiency—measured using the Operating Cost to Operating Revenue ratio (BOPO)—has a significant negative impact on the profitability of Islamic commercial banks. This indicates that the higher the OIR value, the lower the Return on Assets (ROA), making the control of operating costs a crucial factor in enhancing a company's profitability. [Sari & Nurdawansyah \(2024\)](#) also confirmed that the OIR has a significant negative effect on ROA, thereby confirming the negative relationship between operating costs and profitability. In this study, operating costs were measured using the Operating Expenses to Operating Income (BOPO) ratio.

2.4 Capital Structure

Capital structure refers to the composition of a company's funding, comprising equity and debt, which is used to finance both operational activities and investments. According to [Brigham and Houston \(2019\)](#), the use of debt can enhance profitability through financial leverage, provided that the rate of return on investment exceeds the cost of debt borne by the company. From the perspective of the Trade-Off Theory, a company will determine its optimal capital structure by balancing the benefits of using debt—in the form of a tax shield—against bankruptcy costs and agency costs ([Harjito, 2011](#)). Therefore, an optimal level of debt utilisation is expected to increase both firm value and profitability. Previous research on the impact of capital structure on profitability has yielded mixed results. [Sunaryo et al. \(2021\)](#) and [Septhasari & Surjadi \(2021\)](#) found that capital structure, proxied by the Debt-to-Equity Ratio (DER), had no significant effect on profitability. Conversely, [Sabakodi and Andreas \(2024\)](#) demonstrated that the DER has a positive and significant effect on Return on Assets (ROA). These differing research findings suggest that the impact of capital structure on profitability requires further testing across different firm characteristics and research periods. In this study, capital structure is proxied using the Debt to Equity Ratio (DER) as this ratio illustrates the proportion of a company's funding derived from

debt compared to equity. The higher the DER value, the greater the use of debt in the company's capital structure.

2.5 Liquidity

Liquidity is a company's ability to meet its short-term obligations using its current assets. [Hanafi and Halim \(2016\)](#) state that a current ratio that is too high may indicate the presence of idle current assets that are not being managed productively, which can reduce profitability; conversely, a current ratio that is too low reflects a liquidity risk that may disrupt operational smoothness, thereby also limiting the company's ability to generate profit. [Novita et al. \(2022\)](#) found that the current ratio (CR), in conjunction with other financial ratios, had a positive effect on return on assets (ROA) for food companies listed on the Indonesia Stock Exchange (BEI) between 2017 and 2020. Putri & Munfaqiroh (2020) emphasised that liquidity ratios are a key component in analysing a company's financial performance. According to [Sumarni et al. \(2023\)](#), liquidity influences profitability in banking companies listed on the Indonesia Stock Exchange during the period 2019–2021. The research findings indicate that companies with a strong ability to meet their short-term obligations tend to have higher levels of profitability. [Gardenia & Jonnardi \(2021\)](#) found that liquidity has a significant effect on capital structure. This suggests that a company's ability to meet its short-term obligations is one of the considerations in determining the company's funding composition. In this study, liquidity is measured using the Current Ratio (CR).

3. Methodology

This study employs a quantitative approach with a causal-associative research design, aiming to analyze the impact of operating costs, capital structure, and liquidity on corporate profitability. The study utilizes secondary data in the form of annual financial reports from processed food sub-sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. All data were obtained from the official IDX website (www.idx.co.id) and financial reports published by the respective companies. The population for this study consists of all processed food sub-sector companies listed on the Indonesia Stock Exchange during the observation period. A purposive sampling technique was used based on the following criteria: (1) processed food sub-sector companies continuously listed on the Indonesia Stock Exchange during the 2021–2025 period; (2) companies that issued complete annual financial reports throughout the study period; (3) financial reports containing the information required to calculate all research variables—namely Return on Assets (ROA), Operating Costs to Operating Revenue (BOPO), Debt to Equity Ratio (DER), and Current Ratio (CR); and (4) companies that were not delisted during the study period. Based on these criteria, 28 companies were selected as the research sample, resulting in a total of 140 observations (firm-years). The dependent variable in this study is profitability, proxied by Return on Assets (ROA). The independent variables include operating costs (proxied by the Operating Costs to Operating Revenue ratio, or BOPO), capital structure (proxied by the Debt to Equity Ratio, or DER), and liquidity (proxied by the Current Ratio, or CR). The measurement of each variable is based on theory and prior research, as detailed in the literature review section. Data collection was conducted through a documentation study involving the gathering, recording, and processing of financial report data from the sampled companies. Subsequently, the data were analyzed quantitatively using IBM SPSS Statistics software. The analysis stages include descriptive statistical analysis to describe the characteristics of the research data; multiple linear regression analysis to examine the relationships between variables; the coefficient of determination (R^2) test to assess the model's ability to explain variations in profitability; the F-test to examine the simultaneous effect of the independent variables on profitability; and the t-test to examine the partial effect of each independent variable on profitability. Hypothesis testing was conducted at a

significance level (α) of 5%.

4. Results and Discussion

4.1. Descriptive Statistics

The data for this study were sourced from the annual financial reports of 28 companies in the processed food sub-sector listed on the Indonesia Stock Exchange (IDX) for the period 2021–2025. The variables used include Return on Assets (ROA) as an indicator of profitability, Operating Expenses to Operating Revenue (BOPO) as an indicator of operating costs, Debt to Equity Ratio (DER) as an indicator of capital structure, and Current Ratio (CR) as an indicator of liquidity. Data analysis was carried out using SPSS with the multiple linear regression method (Enter Method), with Return on Assets (ROA) as the dependent variable, based on $N = 140$ samples from the 28 companies. The results of the descriptive statistical analysis of the research variables are presented in Table 2 below.

Table 2. Descriptive Statistics Results

Variable	N	Minimum	Maximum	Mean	Std. Deviation
BOPO	140	-7,04	4,50	0,8591	2,11655
DER	140	-4,46	7,61	0,8453	1,77465
CR	140	0,33	8,71	3,0298	2,37575
ROA	140	-3399,78	1811,44	63,7748	869,54742
Valid (listwise)	N 140				

Source: output, 2026

Descriptive statistics were used to provide an overview of the characteristics of each research variable, including the minimum, maximum, mean and standard deviation. As shown in Table 2, the dataset analysed comprised 140 observations from 28 companies in the processed food sub-sector over the period 2021–2025. The operating cost (BOPO) variable had a minimum value of -7.04, a maximum value of 4.50, a mean of 0.8591, and a standard deviation of 2.11655. The fact that the standard deviation exceeds the mean indicates that the BOPO data exhibit a relatively high degree of dispersion, suggesting variation in operational cost efficiency across companies during the study period. The capital structure variable (DER) has a minimum value of -4.46, a maximum value of 7.61, a mean of 0.8453, and a standard deviation of 1.77465. A standard deviation greater than the mean indicates that the use of debt varies considerably amongst the companies in the sample, suggesting significant differences in their funding structures. The liquidity variable (CR) has a minimum value of 0.33, a maximum value of 8.71, a mean of 3.0298, and a standard deviation of 2.37575. These figures indicate that the companies in the sample have a relatively good level of liquidity, although there are differences between companies in their ability to meet their short-term obligations. Meanwhile, the profitability variable (ROA) has a minimum value of -3,399.78, a maximum value of 1,811.44, a mean of 63.7748, and a standard deviation of 869.54742. The standard deviation, which is considerably larger than the mean, indicates that the dispersion of profitability data is very high. Furthermore, the very wide range between the minimum and maximum values indicates the presence of outliers in some companies, meaning that profitability levels across the companies in the sample varied considerably during the study period.

Multicollinearity Test

Table 3. Multicollinearity Test Results

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Variable	Tolerance	VIF	Explanation
BOPO	0.762	1.313	There is no multicollinearity
DER	0.786	1.273	There is no multicollinearity
CR	0.875	1.143	There is no multicollinearity

Source: output, 2026

The multicollinearity test aims to determine whether there is a high correlation between the independent variables in the regression model. The test is carried out by examining the Tolerance and Variance Inflation Factor (VIF) values. A regression model is considered free from multicollinearity if the Tolerance value is > 0.10 and the VIF is < 10 . Based on the multicollinearity test results in Table 3, the operating cost variable (BOPO) has a Tolerance of 0.762 and a VIF of 1.313. The capital structure variable (DER) has a Tolerance value of 0.786 and a VIF of 1.273. Meanwhile, the liquidity variable (CR) has a Tolerance value of 0.875 and a VIF of 1.143. All independent variables have Tolerance values greater than 0.10 and VIF values less than 10. It can therefore be concluded that the regression model does not exhibit multicollinearity; consequently, the independent variables used in this study are not highly correlated with one another and are suitable for multiple linear regression analysis.

Autocorrelation Test

Table 4. Autocorrelation Test Results

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	Durbin-Watson
1	0.678	0.459	0.392		678.1907942	2.007

Source: output, 2026

An autocorrelation test was carried out using the Durbin-Watson (DW) statistic to determine whether or not there was a correlation between the residuals of one observation and those of another. The test results yielded a Durbin-Watson value of 2.007. This value falls within the region where autocorrelation is absent, namely around 2, and lies between the upper limit (dU) and $4 - dU$ in accordance with the Durbin-Watson criteria. It can therefore be concluded that the regression model does not exhibit autocorrelation; consequently, the assumption of residual independence is satisfied and the regression model is suitable for hypothesis testing.

4.2. Results of the Coefficient of Determination Test

The results of the multiple linear regression analysis, based on the SPSS output with ROA as the dependent variable and three independent variables (BOPO, DER, CR), are presented in the following tables.

Table 5. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,678a	0,459	0,392	678,19079

Source: output, 2026

Based on Table 6 (Model Summary), an R value of 0.678 was obtained, indicating that the relationship between the variables of operating costs (BOPO), capital structure (DER) and liquidity (CR) and profitability (ROA) is relatively strong. The R-squared value of 0.459 indicates that 45.9 per cent of the variation in profitability (ROA) can be explained by the variables BOPO, DER and CR, whilst the remaining 54.1 per cent is influenced by other factors outside the research model.

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After adjusting for the number of independent variables and the number of observations, an Adjusted R-squared value of 0.392 was obtained, meaning that 39.2 per cent of the variation in a company's profitability can be explained by the three independent variables in the model, whilst the remaining 60.8 per cent is influenced by other variables not examined in this study.

4.3. Simultaneous F-test

Table 6. Simultaneous F-test Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9376417,352	3	3125472,451	6,795	0,002b
	Residual	11038626,080	24	459942,753		
	Total	20415043,432	27			

Source: output, 2026

The tests were conducted at a significance level of 5 per cent ($\alpha = 0.05$). Based on the results of the ANOVA test in Table 7, the calculated F-value was 6.795 with a significance value of 0.002. This significance value is less than 0.05 ($0.002 < 0.05$); therefore, H_0 is rejected and H_4 is accepted. It can therefore be concluded that operating costs (BOPO), capital structure (DER) and liquidity (CR) simultaneously have a significant effect on profitability (ROA) in companies in the processed food sub-sector listed on the Indonesia Stock Exchange for the period 2021–2025. These results indicate that the three independent variables collectively explain changes in corporate profitability; consequently, the regression model used is suitable for testing the partial effects of each variable.

4.4. Partial T-test

Table 7. Partial T-test Results

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	-677,436	242,597	—	-2,792	0,010
BOPO	146,445	70,651	0,356	2,073	0,049
DER	356,263	82,969	0,727	4,294	0,000
CR	103,719	58,723	0,283	1,766	0,090

Source: output, 2026

Based on the results of the t-test in Table 7, the operational cost (BOPO) variable has a regression coefficient of 146.445, a calculated t-value of 2.073, and a significance level of 0.049. As the significance level is less than 0.05 ($0.049 < 0.05$), it can be concluded that operating costs (BOPO) have a positive and significant effect on profitability (ROA). The capital structure variable (DER) has a regression coefficient of 356.263, a t-value of 4.294, and a significance level of 0.000. A significance value of less than 0.05 ($0.000 < 0.05$) indicates that capital structure (DER) has a positive and significant effect on profitability (ROA). Meanwhile, the liquidity variable (CR) has a regression coefficient of 103.719, a t-value of 1.766, and a significance level of 0.090. As the significance level is greater than 0.05 ($0.090 > 0.05$), it can be concluded that liquidity (CR) has a positive but insignificant effect on profitability (ROA). Overall, the results of the t-test indicate that operating costs (BOPO) and capital structure (DER) have a positive and significant effect on profitability (ROA), whilst liquidity (CR) has a positive but insignificant effect on profitability (ROA) for companies in the processed food sub-sector listed on the Indonesia Stock Exchange during the period 2021–2025.

4.5. Multiple Linear Regression Analysis

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Table 8. Multiple Linear Regression Analysis Results

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	-677,436	242,597	—	-2,792	0,010
BOPO	146,445	70,651	0,356	2,073	0,049
DER	356,263	82,969	0,727	4,294	0,000
CR	103,719	58,723	0,283	1,766	0,090

Source: output, 2026

Based on the results of the analysis, the following regression equation was obtained:

$$ROA = -677,436 + 146,445 \text{ BOPO} + 356,263 \text{ DER} + 103,719 \text{ CR}$$

Based on this regression equation, the constant term of $-677,436$ indicates that if the variables operational costs (BOPO), capital structure (DER) and liquidity (CR) are assumed to be zero, then profitability (ROA) is estimated to be $-677,436$. The regression coefficient for the operating cost (BOPO) variable, 146.445 , indicates that a one-unit increase in BOPO will increase profitability (ROA) by 146.445 units, assuming all other independent variables remain constant (*ceteris paribus*). The regression coefficient for the capital structure variable (DER) of 356.263 indicates that a one-unit increase in DER will increase profitability (ROA) by 356.263 units, assuming all other variables remain constant. Furthermore, the regression coefficient for the liquidity variable (CR) of 103.719 indicates that a one-unit increase in CR will increase profitability (ROA) by 103.719 units, assuming all other independent variables remain constant.

4.6. Discussion

The Effect of Operating Costs (BOPO) on Profitability (ROA)

Based on Table the operating costs (BOPO) variable has a coefficient B of 146.445 , a standardised beta of 0.356 , a t-statistic of 2.073 , and a significance level of 0.049 . Since $\text{Sig.} = 0.049 < \alpha = 0.05$, it can be concluded that operating costs (BOPO) have a positive and significant effect on profitability (ROA). Although the effect is significant, the direction of this positive relationship is opposite to that hypothesized (negative and significant), and so H_1 is rejected. This positive coefficient is inconsistent with Cost Efficiency Theory, which states that an increase in the BOPO ratio should reduce a company's profitability, and also differs from the findings ([Sari & Nurdawansyah, 2024](#)), which demonstrated that BOPO has a negative and significant effect on ROA. From the perspective of Signalling Theory, this finding can be interpreted to mean that the increase in operating expenses among Food and Beverage companies during the 2021–2025 period most likely occurred in tandem with business scale expansion, increased production volumes, and investment in marketing and distribution, which ultimately contributed to greater growth in operating revenue; thus, the rise in costs serves as a signal of business growth rather than merely an indication of inefficiency. This is also consistent with the findings ([Karmilah et al., 2024](#)), which show that operating costs are closely linked to a company's net profit within the same sector, although the direction of the relationship depends on how increases in these costs are offset by increases in revenue. With a sample size of 140 , the model better captures the variation in BOPO patterns across companies, meaning that relationships which were not significant in the initial tests are now significant, although the direction of these relationships requires further examination through studies incorporating additional control variables such as business scale or sales growth.

The Effect of Capital Structure (DER) on Profitability (ROA)

Based on Table, the capital structure variable (DER) has a coefficient B of 356.263 , a standardised

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beta of 0.727, a t-statistic of 4.294, and a significance level of 0.000. As $\text{Sig.} = 0.000 < \alpha = 0.05$, it can be concluded that capital structure (DER) has a positive and significant effect on profitability (ROA). Consequently, H2 is accepted. The direction of this significant positive coefficient (+356.263) is fully consistent with the Trade-Off Theory, which explains that companies determine their optimal capital structure by balancing the tax benefits of debt (tax shield) against bankruptcy costs and agency costs ([Jensen & Meckling, 1976](#)), and is in line with the findings of [Sabakodi & Andreas \(2024\)](#) and [Harjito \(2011\)](#), who found that the DER has a positive and significant effect on the financial performance of companies listed on the IDX. These results indicate that the use of debt by processed food companies during the 2021–2025 period generally remains at a favourable point on the trade-off curve, where the tax benefits and leverage from external financing are able to drive business expansion and ultimately significantly improve profitability. From a signalling theory perspective, a well-managed debt-to-equity ratio (DER) can also serve as a positive signal to investors and creditors that management has confidence in the company's future cash flow prospects, leading the market to respond positively to this capital structure in terms of the company's performance.

The Effect of Liquidity (CR) on Profitability (ROA)

Based on Table 5, the liquidity variable (CR) has a coefficient B of 103.719, a standardised beta of 0.283, a t-statistic of 1.766, and a significance level of 0.090. As $\text{Sig.} = 0.090 > \alpha = 0.05$, it can be concluded that liquidity (CR) has a positive but insignificant effect on profitability (ROA) at the 95 per cent confidence level, although the effect is close to being significant at the 90 per cent level. Consequently, H3 is rejected. The positive direction of the coefficient (+103.719) is consistent with findings that CR simultaneously has a positive effect on ROA in food companies listed on the IDX. From a signalling theory perspective, a good level of liquidity reflects a company's ability to meet its short-term obligations and carry out operations without financial disruption, thereby serving as a positive signal to creditors and investors regarding the company's financial health. Nevertheless, the effect of CR on ROA in this study was not statistically significant at the $\alpha = 0.05$ level, indicating that high liquidity does not automatically translate into higher profitability. This is likely due to excess current assets that are not managed productively—for example, in the form of idle cash or receivables—which can in fact constitute an opportunity cost that hampers profitability. This finding is consistent with ([Nafiah & Munawaroh, 2026](#)), who used a larger sample (19 companies, 95 observations) and also found that liquidity does not have a significant effect on profitability, indicating that the relationship between CR and ROA in the processed food sector is indeed complex and influenced by the efficiency of working capital management, rather than solely by the magnitude of the liquidity ratio itself.

5. Conclusion

The research findings indicate that operating costs (BOPO) have a positive and significant effect on profitability (ROA), although the direction of this relationship differs from the proposed hypothesis. This suggests that an increase in operating costs within companies in the processed food sub-sector does not necessarily reflect inefficiency, but may occur alongside an increase in business activity capable of generating higher profits. Capital structure (DER) was found to have a positive and significant effect on profitability, suggesting that the optimal use of debt can support improved company performance. Meanwhile, liquidity (CR) had a positive but insignificant effect on profitability; thus, a company's ability to meet its short-term obligations does not necessarily lead to increased profits. Taken together, operating costs, capital structure and liquidity have a significant impact on the profitability of companies in the processed food sub-sector listed on the Indonesia Stock Exchange for the period 2021–2025. These findings indicate that a company's

profitability is influenced by a combination of operational cost management, capital structure policy, and liquidity management. This study provides empirical evidence regarding the relationship between these three variables in companies within the processed food sub-sector, thereby serving as a reference for both companies and future researchers in understanding the factors that influence profitability.

For companies, the results of this study indicate that the management of operating costs and capital structure should be a key focus, as both variables have been shown to influence profitability. Companies are advised to continue improving the efficiency of their operating costs without compromising the effectiveness of their business activities, and to manage their capital structure optimally by striking a balance between the benefits of debt and the financial risks involved. Furthermore, companies also need to optimise the management of current assets so that their liquidity can make a greater contribution to improving profitability. For future researchers, it is recommended to include other variables that may potentially influence profitability, such as sales growth, company size, asset efficiency, or corporate governance, thereby enhancing the model's ability to explain variations in profitability. Future research could also extend the observation period, cover a more diverse range of industrial sectors, and apply panel data regression methods to analyse cross-firm and inter-period data characteristics more comprehensively.

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