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ANALYSIS OF FINANCIAL PERFORMANCE OF INDUSTRIAL SECTOR COMPANIES THROUGH LIQUIDITY, LEVERAGE AND EFFICIENCY RATIOS

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Abstract:
In a highly competitive industrial landscape, maintaining financial strength has become essential for a firm's long-term viability. Profitability—captured most directly through Return on Assets (ROA)—reflects how effectively a company converts its assets into earnings. This study examines how three key financial indicators shape ROA: the Current Ratio, representing short-term financial resilience; the Debt to Equity Ratio, reflecting the structure and risk profile of corporate financing; and Total Asset Turnover, indicating how efficiently assets are mobilized to generate revenue. By assessing these ratios in industrial companies listed on the Indonesia Stock Exchange during 2021–2024, the research provides a concise overview of how liquidity, leverage, and asset efficiency collectively influence corporate profitability. Each ratio reflects a different aspect of financial health: CR describes the company's liquidity position, DER indicates its leverage and risk exposure, while TATO captures the degree to which its assets are effectively used to generate sales. The focus on this period is driven by the economic instability associated with the COVID-19 pandemic and its recovery phase, which may have reshaped corporate financial dynamics. Previous studies examining these ratios simultaneously within the industrial sector remain limited. The results of this study are anticipated to contribute to the broader academic discourse on the factors that influence corporate financial performance, while also providing practical guidance for managers and investors who aim to improve a company's profitability.

Keywords: Financial Performance, Financial Ratios, Return on Assets (ROA), Current Ratio, DER, TATO

INTRODUCTION

In today's rapidly evolving and highly competitive marketplace, companies must ensure their long-term viability by consistently achieving optimal performance outcomes. A key indicator of a company's overall performance is its financial standing, as it not only demonstrates the outcomes of its operational activities but also functions as a foundation for strategic decisions made by various stakeholders, including managers, investors, creditors, and financial analysts.

Financial performance can be evaluated through several approaches, one of which is the use of financial ratio analysis. This analytical technique examines a firm's financial health by comparing key figures reported in its financial statements. These financial ratios provide a comprehensive view of a firm's liquidity, capital composition, operational effectiveness, and profitability. Among them, Return on Assets (ROA) holds particular significance because it reflects how efficiently a company transforms its asset base into net income.

A company's Return on Assets (ROA) is influenced by several financial ratios that reflect different dimensions of its internal performance. One of the key indicators is liquidity, represented by the Current Ratio (CR), which illustrates how capably a firm can cover its short-term obligations

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and withstand immediate financial pressures. In addition to liquidity, the leverage position—commonly measured through the Debt to Equity Ratio (DER)—provides an overview of how much the firm relies on borrowed funds relative to its own capital. This metric reflects how a company finances its operations by contrasting the amount of debt it carries with the equity provided by shareholders, thereby offering an indication of the financial risk the company is exposed to.

In addition, the efficiency aspect—captured through Total Asset Turnover (TATO)—indicates how effectively a firm mobilizes its entire asset base to produce revenue. A higher TATO suggests that the company is converting its resources into sales more productively, reflecting stronger operational performance. Earlier work by Oktapiani and Kantari (2021) indicates that certain financial ratios—such as the current ratio—play an important role in shaping a company's Return on Assets (ROA). However, empirical studies that simultaneously assess the effects of CR, DER, and TATO on ROA are still relatively scarce, particularly in the context of more recent years and within a wider range of industrial subsectors. Moreover, the economic volatility experienced globally and nationally during the COVID-19 crisis and the ensuing recovery phase makes the 2021–2024 timeframe particularly relevant for reexamining how financial ratios shape corporate performance.

Industrial firms listed on the Indonesia Stock Exchange (IDX) exhibit diverse characteristics, largely shaped by the distinct sectors and subsectors in which they operate. Nevertheless, the industrial sector as a whole contributes significantly to Indonesia's economic progress. Thus, understanding the internal factors that shape the financial outcomes of these companies becomes essential, as such insights can guide the formulation of effective financial management strategies and assist investors in making more informed and strategic decisions.

Building on the previous discussion, this research investigates how three fundamental financial indicators—Current Ratio (CR), Debt to Equity Ratio (DER), and Total Asset Turnover (TATO)—influence Return on Assets (ROA) in industrial companies listed on the Indonesia Stock Exchange (IDX) throughout the 2021–2024 period. The findings are anticipated to provide valuable theoretical contributions and practical implications, especially for financial management practices, while simultaneously strengthening the body of knowledge related to evaluating corporate performance through key financial indicators.

Financial Ratios. Financial ratio analysis is a method that combines various elements in financial statements, presented in the form of simple mathematical calculations, for a specific period. By comparing numerical components presented in the financial statements—whether originating from the balance sheet or the income statement—this form of analysis provides a more detailed picture of a firm's financial condition during a specific reporting period.

Financial ratio analysis is a form of calculation aimed at assessing financial statements. This approach—analyzing the relationship between figures in financial statements—remains one of the most effective ways to evaluate a firm's financial position and overall performance. According to Dwiningwarni and Jayanti (2019), a financial ratio is essentially a numerical comparison between two interrelated components of the financial statements, used to generate meaningful and relevant insights.

Destiani and Hendriyani (2021) note that financial ratios function as diagnostic instruments that help reveal the overall condition of a company's finances, allowing analysts to identify both its strong points and areas that require improvement.

Financial Performance. Makatita (2016) describes financial performance as an organization's ability to administer and deploy its resources in an efficient and purposeful manner. This performance is captured through the financial activities undertaken within a given reporting period, which are later consolidated into formal statements such as the income statement and balance sheet.

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The income statement outlines the revenues generated and expenses recognized during the period, whereas the balance sheet provides a snapshot of the firm's financial position at the end of the cycle, detailing its assets, liabilities, and shareholders' equity.

Furthermore, to evaluate whether the company has implemented its financial management properly and in accordance with applicable accounting principles, a financial performance analysis is conducted. This analysis aims to measure the company's compliance with accounting regulations and standards, as well as existing internal financial policies.

Furthermore, a company's capabilities are also assessed through the determination of specific metrics or indicators, such as financial ratios, which can be used to evaluate its success in creating profits and added value for stakeholders. These measures reflect how effectively a company carries out its operations, produces earnings, and sustains its financial stability over time. They also function as reference points for evaluating the organization's capability to manage and allocate its resources responsibly.

Profitability Ratio. The profitability ratio—commonly measured through Return on Assets (ROA)—is a key metric used to assess how effectively a company converts its controlled assets into net earnings. ROA reflects the extent to which management can optimize the use of organizational resources, particularly the asset base, in producing profit. This measure is obtained by dividing net income by total assets and is typically presented as a percentage. It offers a clear indication of the amount of profit generated for every unit of assets owned by the company. Consequently, a higher ROA signifies stronger managerial efficiency in managing and leveraging assets to achieve optimal profitability.

ROA serves not only as an indicator of profitability but also as a parameter for assessing how effectively management utilizes company assets. This ratio illustrates the connection between the assets employed in operational activities and the net income produced, thereby offering a clear representation of a firm's financial performance. Its significance lies in determining whether a company's assets are being used to their fullest potential. A low ROA may signal that assets are not being used efficiently or are generating insufficient returns, pointing to potential operational inefficiencies within the organization.

Furthermore, ROA also serves as a measuring tool for management to assess the success of implemented strategies and financial decisions in increasing company value. Management can use ROA as a benchmark for reviewing asset structure, capital utilization, and the overall effectiveness of operational activities. An increase in ROA over time indicates improvements in asset management and operational efficiency. Conversely, a decrease in ROA can signal the need for a company to adjust its asset management or current business strategy.

For investors and other external stakeholders, ROA is a crucial metric for evaluating a company's potential to deliver profitable returns. A high ROA suggests that the firm can generate substantial earnings even with a relatively limited asset base, indicating strong efficiency and promising growth potential. From a creditor's perspective, ROA also provides insight into a company's capacity to fulfill its financial commitments, as higher profitability often reflects the likelihood of healthy cash flows. Consequently, ROA is regarded as a strategically important financial ratio and is widely relied upon in business assessments and investment decision-making (Jaya & Kuswanto, 2021).

Liquidity Ratio (Current Ratio). Heikal et al. (2014) note that the Current Ratio (CR) functions as an indicator of a firm's liquidity, illustrating its capacity to settle short-term obligations using readily available current assets such as cash, receivables, and inventory. When a company reports a higher CR, it generally reflects stronger financial readiness, suggesting that immediate liabilities can

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be managed without difficulty. This condition also provides greater confidence to investors and creditors, as it lowers the perceived risk of default.

However, a very high CR does not always reflect good financial efficiency. A large amount of idle inventory or cash may cause a high CR. Although inventory, especially raw materials or work-in-progress, is listed as a current asset, it may not be readily converted into cash or profit. Furthermore, excessive inventory requires additional costs to process into finished products and can incur other expenses such as storage costs and the risk of damage or depreciation. Therefore, an increase in the current ratio due to increased inventory does not necessarily indicate increased profitability.

Furthermore, excess cash that is not immediately invested or used for productive activities can become idle cash, which will actually reduce the efficiency of asset utilization. Over the long run, such a condition may result in reduced profitability because the company is not leveraging its resources efficiently to generate earnings. Therefore, while CR is important as a measure of liquidity, its value needs to be carefully analyzed and correlated with other ratios and the composition of current assets to obtain a clearer picture of the company's financial health and management effectiveness.

Leverage Ratio (Debt to Equity Ratio). The Debt to Equity Ratio (DER) is a financial indicator that reflects how much of a company's funding—whether for operations or investment activities—is sourced from debt compared to the amount contributed by its shareholders. This ratio compares total liabilities with the capital provided by owners. When a company's DER is high, it indicates a greater dependence on borrowed funds rather than internal capital, suggesting a more aggressive approach in leveraging debt for business expansion or operational activities. However, an elevated DER also implies increased financial vulnerability, as the company must consistently meet fixed obligations—such as interest payments—regardless of its current financial performance.

Conversely, a lower DER reflects a more cautious financing strategy, indicating that the company relies predominantly on its own equity capital rather than on borrowed funds. This condition is generally viewed positively by creditors, as it suggests that the firm possesses strong financial stability and is capable of meeting its obligations, particularly in situations that may involve liquidation. Additionally, a lower DER helps minimize financial pressure because the company is not burdened by substantial interest payments.

In practice, the optimal DER level differs across industries and depends heavily on the strategic orientation of each business. For instance, companies operating in capital-intensive sectors such as heavy manufacturing or property development often exhibit higher DER values because they require substantial funding that cannot be met solely through internal equity. Meanwhile, companies operating in the service or technology sectors typically have a lower DER because they require fewer fixed assets. Therefore, management must be able to balance the use of debt and equity to maintain a healthy capital structure, manage risks, and maintain growth opportunities. DER is not only a concern for internal management but is also one of the key indicators considered by investors and creditors in financial decision-making (Oktaviani et al., 2023).

Efficiency Ratio (Total Asset Turnover). Juwita and Malau (2020) describe Total Asset Turnover (TATO) as a metric that evaluates how effectively a company transforms its entire asset base into revenue. This measure reflects the firm's ability to leverage both its short-term resources—such as cash, receivables, and inventory—and its long-term assets, including operational facilities and equipment, to support and enhance sales generation. A higher TATO value suggests greater efficiency in transforming assets into revenue, indicating that the company's resources are being utilized productively and contributing positively to financial performance. Conversely, a low TATO

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value may signal inadequate asset utilization or that the company's sales levels are not proportional to the value of its assets.

TATO is highly relevant in sectors such as manufacturing and retail, where effective asset management is a key factor in business success. This ratio also helps management evaluate the effectiveness of operational strategies and can guide decisions related to asset investment, production efficiency, or inventory management.

Hypothesis Development. Lestari (2022) explains that the Liquidity Ratio—commonly represented by the Current Ratio (CR)—serves as a measure of a firm's capacity to meet its short-term financial commitments using the assets classified as current. The ratio is obtained by dividing total current assets by total current liabilities. A higher CR indicates a stronger liquidity position, suggesting that the company is better equipped to handle immediate financial obligations without strain.

Return on Assets (ROA) serves as an important profitability metric that reflects how well a company can convert its overall asset holdings into net income. The ratio is derived by comparing net profit with the total value of assets owned. When a firm reports a higher ROA, it indicates that management has been more successful in deploying the organization's resources in a productive and efficient manner to generate earnings.

From this theoretical standpoint, the study posits that the Current Ratio has a positive relationship with Return on Assets (ROA). An improvement in the Current Ratio may reflect sound financial management, suggesting that the firm is not only capable of meeting its near-term obligations but also possesses adequate resources to support operational activities that can ultimately strengthen profitability.

Companies with a high current ratio may be better equipped to capitalize on profitable investment opportunities, which in the long term can contribute to increased net income. In addition, good liquidity can reduce the possibility of bankruptcy and increase investor confidence, which also plays a role in increasing ROA.

Nevertheless, this relationship is not necessarily straightforward. A situation in which current assets substantially exceed current liabilities may signal inefficient asset utilization, which could lead to a decline in ROA. For this reason, the present study seeks to examine and evaluate the link between the current ratio and ROA, while also exploring whether additional variables may influence this relationship.

H1: Liquidity (Current Ratio) has a positive effect on profitability in industrial companies listed on the Indonesia Stock Exchange.

Leverage Ratio (Debt to Equity). Azahri (2018) states that the Debt to Equity Ratio (DER) illustrates the proportion of a company's financing that originates from borrowed funds relative to the capital contributed by its shareholders. A high DER indicates a strong dependence on debt, which may elevate the firm's exposure to financial risk and increase the burden of interest payments. In contrast, Return on Assets (ROA) represents the firm's ability to convert its total assets into profits, where a higher ROA suggests more efficient and effective utilization of those assets in producing income.

The hypothesis formulated in this research proposes that DER exerts a negative influence on ROA. When a company carries a high level of leverage, its interest obligations increase, which can diminish net earnings and, in turn, result in a lower ROA. Moreover, an increased reliance on debt heightens the risk of financial distress and may erode investor confidence, which can further diminish a firm's profitability and operational efficiency.

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However, the use of debt does not always yield negative consequences. When debt is used to finance investments that generate economic value, it can strengthen a company's capacity to produce profits, ultimately leading to an increase in ROA. Based on this reasoning, the present study aims to examine how the Debt to Equity Ratio (DER) influences Return on Assets, while also considering other potential determinants—such as industry characteristics, corporate strategic choices, and broader market conditions—using empirical data from industrial companies listed on the Indonesia Stock Exchange.

H2: Leverage (Debt to Equity) has a negative effect on the Profitability Ratio in industrial companies listed on the Indonesia Stock Exchange.

The Efficiency Ratio—typically represented by Total Asset Turnover (TATO)—assesses how effectively a firm transforms its entire asset portfolio into revenue. The ratio is obtained by comparing total sales with the value of all assets under the company's control. A higher TATO value signals that the firm is extracting greater income from each unit of assets, reflecting stronger operational efficiency and better asset productivity.

Return on Assets (ROA) functions as a key profitability metric that illustrates how effectively a company converts the assets under its control into net income. This measure is calculated by relating the firm's net profit to its total asset base. In principle, ROA reflects how successfully management utilizes the organization's resources to generate earnings in a productive and efficient manner.

This study posits that Total Asset Turnover (TATO) exerts a positive effect on Return on Assets (ROA). If a company can generate significant revenue from its assets (high TAT), this has the potential to increase net income, which in turn improves ROA. Efficient asset utilization not only increases revenue but also contributes to cost control and increased profitability.

The objective of this study is to analyze the connection between Total Asset Turnover (TATO) and Return on Assets (ROA) in industrial companies listed on the Indonesia Stock Exchange. The analysis also takes into account several contextual factors—such as firm size, capital structure, and market conditions—that may influence this relationship. Through this broader perspective, the study aims to offer a deeper understanding of how asset utilization efficiency contributes to improving a company's overall financial performance (Rachmawati, 2019).

H3: The Efficiency Ratio (Total Asset Turnover) has a positive effect on the Profitability Ratio in industrial companies listed on the Indonesia Stock Exchange.

Conceptual Research Model.

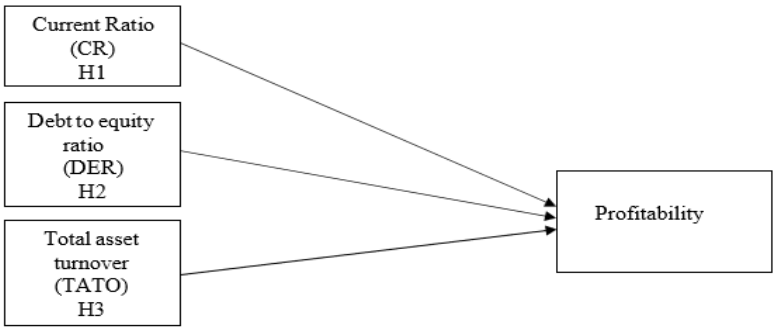

Figure 1. Conceptual Research Model

METHODS

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Type of Research. The present investigation is framed within a quantitative logic, in which all observations are treated as numerical constructs that can be computed, compared, and tested. Rather than simply describing financial conditions, this approach is intended to uncover how movements in key financial indicators interact with shifts in profitability, as captured by Return on Assets (ROA). The empirical domain of the study consists of industrial enterprises operating on the Indonesia Stock Exchange (IDX) during 2021–2024, whose officially published annual reports serve as the principal source of secondary evidence. These documents were obtained through a structured retrieval process and subsequently organized for statistical treatment. To model the relational dynamics among variables, the study employs a multi-variable regression framework, allowing each predictor—Current Ratio, Debt to Equity Ratio, and Total Asset Turnover—to be assessed in terms of its individual and joint contribution to changes in ROA. Statistical verification is carried out through t-statistics and F-statistics, ensuring that every estimated parameter is evaluated for its empirical reliability. Ultimately, the methodological structure of this research is designed to produce an analytical mapping of how liquidity strength, leverage composition, and asset-use efficiency converge to influence profitability across Indonesia's industrial sector. The resulting insights are expected to assist both corporate decision-makers and investors in refining strategies anchored in measurable financial performance.

Type of Sampling. This study utilizes a purposive sampling strategy, where the selected observations are intentionally chosen according to specific criteria that match the aims of the research. A key requirement is that the firms must be publicly listed on the Indonesia Stock Exchange to ensure that the data used are reliable and appropriately reflect the conditions of the Indonesian capital market. The study further narrows its focus to firms operating in the industrial sector so that the analysis accurately reflects how financial ratios affect financial performance within this specific industry. Additionally, the selected companies are required to have complete and accessible financial statements for the 2021–2024 period. This requirement ensures that the dataset used in the analysis is comprehensive and represents the financial conditions of the companies over the designated timeframe. By applying these criteria, the sampling process aims to produce precise and contextually meaningful findings.

In addition, companies selected for the sample must have complete and accessible data for all financial ratios analyzed in this study—specifically the Current Ratio, Debt to Equity Ratio, Total Asset Turnover, and Return on Assets. After these criteria are established, the researcher gathers the necessary information from the annual financial statements of firms that fully meet the predetermined sampling requirements. The final sample size will depend on how many companies meet the established criteria and on the availability of the financial data required for analysis. By applying a purposive sampling approach, this study aims to produce findings that are both credible and contextually relevant to industrial firms listed on the Indonesia Stock Exchange, especially in analyzing how financial ratios contribute to variations in their financial performance.

Data Collection. This study obtains its dataset by reviewing publicly released financial documents issued each year by industrial firms listed on the Indonesia Stock Exchange (IDX). The information extracted consists of numerical figures required to calculate the financial indicators used in this research, including the Current Ratio, Debt to Equity Ratio, Total Asset Turnover, and Return on Assets (ROA) as the dependent variable. All financial records are sourced from open-access platforms, chiefly the IDX's official portal, along with the individual company websites of the firms included in the sample. In addition to these primary sources, the researcher may also refer to other secondary materials, such as financial analysis reports, market research publications, and financial databases that provide relevant information about the firms' financial performance. These sources

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help ensure that the data used in the study are comprehensive, accurate, and aligned with the research objectives. The collected data will cover the period from 2021 to 2024, allowing researchers to analyze patterns and relationships between financial ratios and financial performance during that period. Once the data is collected, researchers will process and analyze the data using statistical software to test the predetermined hypotheses. By applying a structured and methodical documentation process, this study seeks to generate accurate and dependable insights into how financial ratios affect the financial performance of industrial companies listed on the Indonesia Stock Exchange.

Operational Definition of Variables.

Dependent Variable. Profitability (Return on Assets) (Y) Return on Assets (ROA) is a ratio that measures how effectively a company uses its assets to generate profits. ROA is calculated using the formula:

$$Profitability\ \frac{Net\ profit}{Total\ As}sets\ X\ 100\%$$

Independent Variable.

a. Liquidity Ratio (Current Ratio). This ratio measures a company's ability to meet short-term obligations with its current assets. It is calculated using the formula:

$$Liquidity\ \frac{Current\ assets}{Current\ Liabilities}$$

b. Leverage Ratio (Debt to Equity). Debt to Equity (DER) is a ratio that measures the proportion of a company's debt to shareholder equity. It is calculated using the following formula:

$$Leverage\ \frac{Total\ Liabilities}{Total\ Equity}$$

c. Efficiency Ratio. Total Asset Turnover (TATO) is a ratio that assesses how effectively a company utilizes its assets to generate profits. It is calculated using the formula:

$$Efficiency\ \frac{net\ sales}{Total\ Asset}$$

Data Analysis Methods.

a. Data Collection: The data used in this study are sourced from the annual financial reports of companies listed on the Indonesia Stock Exchange for the 2021–2024 period. The dataset includes the dependent variable, Return on Assets, as well as the independent variables representing liquidity (Current Ratio), leverage (Debt to Equity Ratio), and efficiency (Total Asset Turnover).
b. Classical Assumption Test: Before estimating the regression model, it is necessary to ensure that the dataset meets the essential assumptions underlying regression analysis. The diagnostic checks to be performed include:
   - Normality Test: Conducted to determine whether the distribution of the data approximates a normal curve.
   - Multicollinearity Test: Implemented to identify the presence of any high correlations among the independent variables that may distort the model's estimation.

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- Heteroscedasticity Test: Used to examine whether the variance of the residuals remains stable across observations.

c. Multiple Linear Regression Analysis: Once all classical assumptions have been satisfied, the study proceeds with multiple linear regression to evaluate how the independent variables influence the dependent variable. The analytical framework is expressed using the following regression equation:

$$Y_{it=}\, \alpha_{it} + \beta_1\, liquidity_{it} + \beta_2\, Leverage_{it} + \beta_3\, Efficiency_{it} + \epsilon_{it}$$

Where;
Y = Return on Assets (ROA)
X1 = Current Ratio (CR)
X2 = Debt to Equity Ratio (DER)
X3 = Total Asset Turnover (TATO)
X4 = Gross Profit Margin (GPM)
$\beta 1 - \beta 4$ = regression coefficient
ait = intercept
ϵit = error term

RESULT AND DISCUSSION

Overview of Industrial Companies. The industrial sector represents a key pillar of the national economy, playing a major role in contributing to Indonesia's overall Gross Domestic Product (GDP). This sector includes the consumer goods industry, basic and chemical industries, other industries, and other sub-sectors. Due to their high capital intensity, industrial companies require effective financial management to maintain stable performance amidst economic changes.

Throughout the 2021–2024 period, Indonesia's industrial sector—represented by companies listed on the Indonesia Stock Exchange (IDX)—experienced significant changes as the nation moved into the economic recovery phase following the COVID-19 pandemic. This transition was accompanied by increasing raw material prices and adjustments in global economic policies, both of which influenced the sector's overall performance. However, thanks to efficiency strategies and solid financial structure management, many companies in the industrial sector were able to survive and even experience increased sales and net profits.

Research Object. The scope of this research covers industrial-sector companies listed on the Indonesia Stock Exchange (IDX) throughout the 2021–2024 period. This sector is chosen because it plays a major role in supporting the national economy and has demonstrated strong adaptability to fluctuations in global economic conditions.

The companies included in the research sample met the following conditions:

1. They operate within the industrial sector and remained continuously listed on the Indonesia Stock Exchange (IDX) throughout the 2021–2024 period.
2. They issued complete annual financial statements for each year covered by the study.
3. They provided quantitative information required for calculating financial ratios, including liquidity, leverage, and efficiency indicators.

The following companies meet the requirements and are used in this research as follows:

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The sample consists of industrial companies listed on the Indonesia Stock Exchange (IDX) that represent a broad spectrum of subsectors within the industry category. These firms include manufacturers of glass, ceramics, metal products, heavy equipment, automotive components, electrical cables, and various industrial goods. Examples of companies meeting the established criteria are Asahimas Flat Glass Tbk, Arwana Citramulia Tbk, Astra Graphia Tbk, Astra International Tbk, MNC Asia Holding Tbk, Bakrie & Brothers Tbk, Citatah Tbk, and Dyandra Media International Tbk. The sample also incorporates firms involved in machinery, cable production, construction materials, and industrial equipment, such as Hexindo Adiperkasa Tbk, Intraco Penta Tbk, Jembo Cable Company Tbk, Jasuindo Tiga Perkasa Tbk, KMI Wire & Cable Tbk, Kabelindo Murni Tbk, Keramika Indonesia Assosiasi Tbk, and Kobexindo Tractors Tbk. Additional qualifying companies originate from subsectors including metal fabrication, logistics support, industrial ceramics, engineering services, and broader manufacturing operations. These include Lion Metal Works Tbk, Mulia Industrindo Tbk, United Tractors Tbk, Surya Toto Indonesia Tbk, Voksel Electric Tbk, Mark Dynamics Indonesia Tbk, Surya Pertiwi Tbk, Superkrane Mitra Utama Tbk, and several others that satisfied all sampling requirements.

Descriptive Statistics.

Table 1. Descriptive Statistical

	CR	DER	TATO	ROA
Mean	159.8804	52.18961	0.850765	4.618550
Median	89.39500	18.82500	0.640000	2.880000
Maximum	4811.500	4147.900	9.150000	51.50000
Minimum	0.130000	-2158.970	0.010000	-19.00000
Std. Dev.	393.8789	363.6250	0.940568	9.259767
Observations	196	196	196	196

Based on the descriptive statistical evaluation of 196 panel data observations, an overview of the distribution and characteristics of each research variable—Current Ratio (CR), Debt to Equity Ratio (DER), Total Asset Turnover (TATO), and Return on Assets (ROA)—can be identified. The average Current Ratio (CR) of 159.88, with a median value of 89.39, suggests that the sampled firms generally maintain a relatively strong level of liquidity. Nevertheless, the data show substantial variation across companies. The CR ranges widely, from a minimum of 0.13 to a maximum of 4,811.50, indicating a highly uneven distribution (Heykal et al., 2024). This variability is further supported by the large standard deviation of 393.88, which far exceeds the mean. Such a condition highlights significant disparities in the firms' abilities to meet short-term financial obligations.

For the Debt to Equity Ratio (DER), the mean value recorded was 52.19, while the median stood at 18.83, suggesting that the majority of firms maintain a capital structure that is more conservative than the overall average. The data also show substantial variability, with the highest DER reaching 4,147.90 and the lowest falling to –2,158.97. A negative DER reflects a situation in which a company's equity becomes negative, resulting in a debt-to-equity ratio below zero. The high standard deviation of 363.63 confirms the significant variation in leverage levels between companies and could impact the stability of the regression model.

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For the Total Asset Turnover (TATO) variable, the mean value is 0.85 and the median is 0.64, illustrating that, on average, each unit of assets is able to generate 0.85 units of sales. The distribution of the data is quite broad, with the highest TATO recorded at 9.15 and the lowest at 0.01. The standard deviation of 0.94 further indicates considerable disparity among companies in terms of how efficiently they utilize their assets to produce revenue.

For the dependent variable, Return on Assets (ROA), the average value is 4.62, indicating that, in general, the companies in the sample are able to generate a net profit of 4.62 percent of their total assets. The median value of 2.88, which is lower than the mean, indicates a positive distribution, where most companies have below-average profitability levels, but there are several companies with very high ROA levels that increase the mean value. The fairly wide range of ROA values, with a maximum of 51.50 and a minimum of -19.00, and a standard deviation of 9.26, reflects significant differences in financial performance between companies.

Stationary Test.

Table 2. Level

No	Variable	Probability	Information
1.	Current Ratio (CR)	0.0000	Stationary
2.	Debt to Equity Ratio (DER)	0.8095	Non-Stationary
3.	Total Asset Turnover (TATO)	0.0000	Stationary
4.	Return On Assets (ROA)	0.0000	Stationary

From the results presented in the table, the variables Current Ratio (CR), Total Asset Turnover (TATO), and Return on Assets (ROA) each show a probability value of 0.0000, indicating that all three are stationary at the level. This means these variables are stable in their original form and do not exhibit unit root characteristics. In contrast, the Debt to Equity Ratio (DER) has a probability value of 0.8095—above the 0.05 significance threshold—signifying that DER is non-stationary at the level. Therefore, a stationarity test at the first difference level is necessary to ensure that all variables are at the same level of stationarity.

Table 3. First Difference Level

No	Variable	Probability	Information
1.	Current Ratio (CR)	0.0000	Stationary
2.	Debt to Equity Ratio (DER)	0.0010	Stationary
3.	Total Asset Turnover (TATO)	0.0000	Stationary
4.	Return On Assets (ROA)	0.0000	Stationary

Based on the table above, which displays the test results at the first difference level, all variables show probability values less than 0.05. The probability values of each variable are CR (0.0000), DER (0.0010), TATO (0.0000), and ROA (0.0000). It indicates that after differencing, all four variables become stationary. Thus, the DER variable, which was previously non-stationary at the level, has met the stationarity requirement after the first difference transformation, while the other three variables are consistently stationary at both levels of testing.

Table 4. Chow Test

Redundant Fixed Effects Tests

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Equation: REGRESSION			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.422791	(48,95)	0.0729

The results of the Chow Test indicate a Cross-section F value of 1.422791 with a probability level of 0.0729. Because this probability is higher than the 5% significance criterion, the Common Effect Model (CEM) is identified as the more appropriate specification for this study, outperforming the Fixed Effect Model (FEM) in explaining the regression structure.

Table 5. Hauman Test

Correlated Random Effects - Hausman Test			
Equation: REGRESSION			
Test cross-section random effects			
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	11.801502	3	0.0081

The Hausman Test yields a Chi-Square value of 11.801502 with an associated probability of 0.0081. Since this probability falls below the 5% significance level, the results indicate that the Fixed Effect Model (FEM) is the more appropriate choice. This finding implies that the individual-specific components are correlated with the independent variables, making FEM a better representation of the underlying data structure.

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	2.314771 (0.1282)	0.608570 (0.4353)	2.923341 (0.0873)
Honda	1.521437 (0.0641)	-0.780109 (0.7823)	0.524198 (0.3001)
King-Wu	1.521437 (0.0641)	-0.780109 (0.7823)	-0.460060 (0.6773)
Standardized Honda	1.525868 (0.0635)	-0.450980 (0.6740)	-4.964215 (1.0000)
Standardized King-Wu	1.525868 (0.0635)	-0.450980 (0.6740)	-3.080975 (0.9990)
Gourieroux, et al.	--	--	2.314771 (0.1427)

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The Lagrange Multiplier (LM) test yields a Breusch–Pagan probability value of 0.1282 for the cross-section element, a figure that exceeds the 5% significance level. This indicates that the Random Effects Model does not provide any statistical improvement over the Common Effects Model, suggesting that the random component in the model is not significant.

Given that both the Chow Test and the Hausman Test previously identified the Common Effects Model (CEM) as the specification that best fits the data relative to the alternative models, this study ultimately applies the CEM as the most appropriate regression framework.

Table 7. Selected Panel Data Regression Test

Dependent Variable: D(ROA)
Method: Panel EGLS (Cross-section weights)
Date: 10/07/25 Time: 12:02
Sample (adjusted): 2022 2024
Periods included: 3
Cross-sections included: 49
Total panel (balanced) observations: 147
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.039659	0.049226	0.805653	0.4218
D(CR)	-7.37E-05	0.000700	-0.105273	0.9163
D(DER)	-0.000103	0.000441	-0.233959	0.8154
D(TATO)	0.807520	0.413506	1.952861	0.0528
Weighted Statistics				
R-squared	0.026567	Mean dependent var		0.479873
Adjusted R-squared	0.006146	S.D. dependent var		6.640970
S.E. of regression	6.630353	Sum squared resid		6286.506
F-statistic	1.300939	Durbin-Watson stat		2.093484
Prob(F-statistic)	0.276540			
Unweighted Statistics				
R-squared	0.000479	Mean dependent var		-0.042392
Sum squared resid	6500.198	Durbin-Watson stat		1.992276

Based on the output, the resulting regression equation is:

$$ROA = 0.039659 - 7.37E\text{-}05\ CR) - 0.0000103(DER) + 0.807520(TATO)$$

The regression outcomes can be interpreted in the following manner:

1. The constant coefficient of 0.039659 indicates that, in the hypothetical situation where the Current Ratio (CR), Debt to Equity Ratio (DER), and Total Asset Turnover (TATO) are all equal to zero, the model predicts a Return on Assets (ROA) of about 0.039659, or roughly 3.97%. This value represents the baseline level of profitability independent of the influence of the explanatory variables. This value represents the baseline profitability level that firms are projected to achieve even in the absence of any influence from the three explanatory variables.
2. The negative coefficient indicates that a one-unit rise in the Current Ratio is associated with a very small decrease in ROA, specifically –7.37E–05, assuming all other variables remain constant. However, with a probability value far above the 0.05 significance threshold, this relationship is

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statistically insignificant. Implication: the firm's liquidity condition—its ability to meet short-term obligations—does not have a meaningful effect on profitability within the study period.

3. The negative coefficient suggests that increases in DER tend to reduce ROA by 0.0000103 units, ceteris paribus. Although the coefficient moves in the expected direction, the impact is statistically insignificant, as shown by the relatively high p-value (above 0.05). This indicates that the firm's leverage position—represented by the balance between debt and equity—does not exert a direct influence on profitability throughout the period analyzed.
4. The coefficient of 0.807520, which is positive, suggests that an increase of one unit in TATO is associated with a rise of 0.807520 units in ROA, assuming the other variables remain unchanged. The probability value—positioned near the 0.05 significance boundary—indicates that this variable demonstrates borderline statistical significance. Economically, this finding highlights that effective utilization of total assets in generating sales has a meaningful influence on profitability. Among the three financial ratios analyzed, TATO stands out as the factor that provides the strongest explanatory contribution to variations in ROA.

Normality Test.

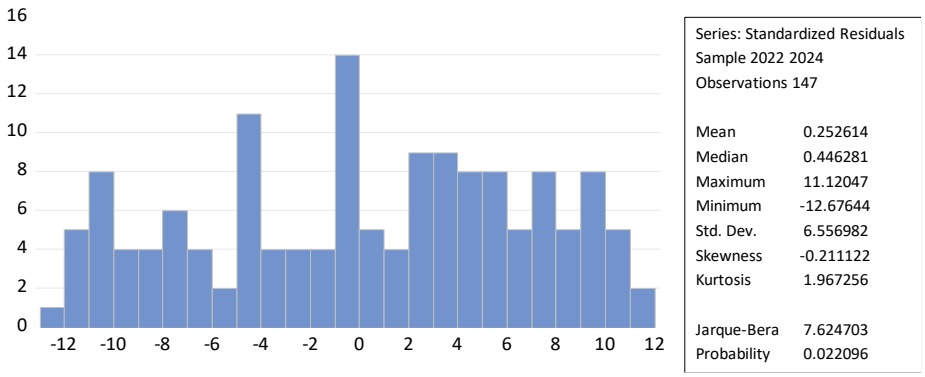

Figure 1. First Normality Test

The normality test results indicate that the Jarque–Bera statistic is 7.624703 with a corresponding probability value of 0.022096. Since this probability is below the 0.05 significance threshold, the residuals are deemed non-normal, meaning the normality assumption in classical linear regression is violated. To correct this issue, the variables were subsequently transformed using a logarithmic approach.

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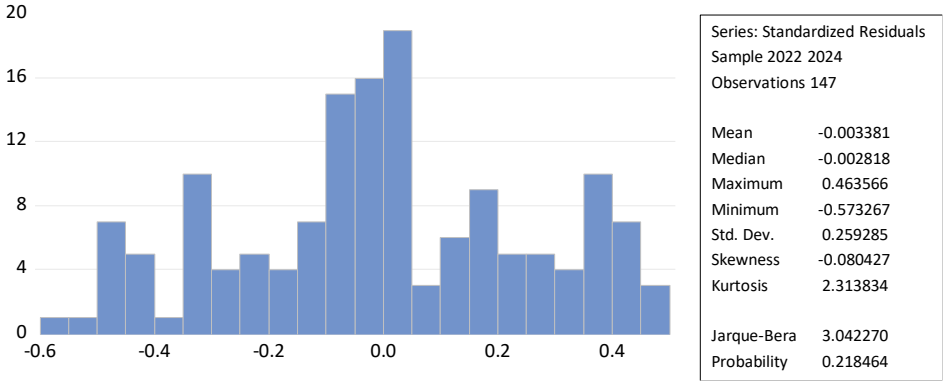

Figure 2. Normality Test After Correction

After data transformation, the normality test results showed significant improvement. After applying the logarithmic transformation, the Jarque–Bera statistic declined to 3.042270, while the probability value rose to 0.218464. Since this value exceeds the 0.05 significance threshold, the residuals can be considered normally distributed, indicating that the normality assumption has been successfully satisfied.

Table 8. Multicollinearity Test

No	R-squared Value of Independent Variable Regression Equation	Primary Regression R-Squared Value (ROA)	Information
1.	CR = DER + TATO = 0.172693	0.343431	No Multicollinearity Occurs
2.	DER = CR + TATO = 0.113068	0.343431	No Multicollinearity Occurs
3.	TATO = CR + DER = 0.065589	0.343431	No Multicollinearity Occurs

In this study, the detection of multicollinearity was carried out using the Auxiliary Regression approach, where each independent variable (CR, DER, and TATO) was separately regressed on the remaining independent variables. The resulting R-squared (R^2) values from these auxiliary models were then compared with the R^2 value generated from the primary regression model, in which ROA serves as the dependent variable. The main regression reported an R^2 of 0.343431, while the auxiliary regressions produced R^2 values of 0.172693 for CR, 0.113068 for DER, and 0.065589 for TATO.

Since all auxiliary R^2 values are notably lower than the R^2 from the primary model, the results indicate that multicollinearity is not an issue within the regression framework. This suggests that the three independent variables—Current Ratio, Debt to Equity Ratio, and Total Asset Turnover—do not display strong linear interdependence, allowing each to contribute uniquely to explaining variations in Return on Assets (ROA).

Table 9. Heteroscedasticity Test

Dependent Variable: ABSRESID
Method: Panel Least Squares
Date: 10/07/25 Time: 12:59
Sample (adjusted): 2022 2024
Periods included: 3
Cross-sections included: 49

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Total panel (balanced) observations: 147				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	3.767194	0.459703	8.194850	0.0000
D(LOG_CR)	4.117535	2.172697	1.895126	0.0601
D(LOG_DER)	-0.744816	1.623275	-0.458835	0.6470
D(LOG_TATO)	1.786879	2.332464	0.766090	0.4449
R-squared	0.031980	Mean dependent var		3.691870
Adjusted R-squared	0.011672	S.D. dependent var		5.549653
S.E. of regression	5.517171	Akaike info criterion		6.280441
Sum squared resid	4352.802	Schwarz criterion		6.361814
Log likelihood	-457.6124	Hannan-Quinn criterion.		6.313504
F-statistic	1.574725	Durbin-Watson stat		1.972971
Prob(F-statistic)	0.198122			

The autocorrelation assessment generated a Durbin–Watson (DW) value of 1.795143. Given the dataset consisting of 147 observations and three independent variables, the table provides a lower bound (dL) of 1.6890 and an upper bound (dU) of 1.772 at the 5% significance level. Referring to the Durbin–Watson decision criteria—which classify a regression model as free from autocorrelation when the DW statistic lies within the interval $dU < DW < 4 - dU$—the obtained DW value falls well inside the acceptable region, namely between 1.772 and 2.228. This indicates that the model does not suffer from autocorrelation, meaning the independence of residuals assumption is fulfilled and the regression estimates are appropriate for further interpretation.

Table 10. Correlation Test

Dependent Variable: D(LOG_ROA)
Method: Panel EGLS (Cross-section weights)
Date: 10/07/25 Time: 11:26
Sample (adjusted): 2022 2024
Periods included: 3
Cross-sections included: 49
Total panel (balanced) observations: 147
Linear estimation after one-step weighting matrix

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.010664	0.006320	1.687380	0.0937
D(LOG_CR)	0.127320	0.056567	2.250768	0.0259
D(LOG_DER)	0.023285	0.024538	0.948956	0.3442
D(LOG_TATO)	0.161072	0.020470	7.868712	0.0000
Weighted Statistics				
R-squared	0.343431	Mean dependent var		0.030316
Adjusted R-squared	0.329657	S.D. dependent var		0.323199
S.E. of regression	0.262013	Sum squared resid		9.817080
F-statistic	24.93294	Durbin-Watson stat		1.795143
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.060159	Mean dependent var		0.000554
Sum squared resid	11.05546	Durbin-Watson stat		2.163397

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The Durbin–Watson (DW) value generated from the autocorrelation test is 1.795143. For a model with 147 observations and three independent variables, the critical lower and upper bounds at the 5% significance level are 1.6890 (dL) and 1.772 (dU). According to the Durbin–Watson evaluation criterion—which states that a regression model can be considered free from autocorrelation when its DW statistic falls within the range dU < DW < 4 − dU—the obtained value of 1.795143 lies comfortably between 1.772 and 2.228. This indicates that the residuals do not exhibit autocorrelation, confirming that the regression model meets the independence assumption and is suitable for further econometric interpretation.

Table 11. Statistical Test

Dependent Variable: D(LOG_ROA)
Method: Panel EGLS (Cross-section weights)
Date: 10/07/25 Time: 11:26
Sample (adjusted): 2022 2024
Periods included: 3
Cross-sections included: 49
Total panel (balanced) observations: 147
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.010664	0.006320	1.687380	0.0937
D(LOG_CR)	0.127320	0.056567	2.250768	0.0259
D(LOG_DER)	0.023285	0.024538	0.948956	0.3442
D(LOG_TATO)	0.161072	0.020470	7.868712	0.0000
Weighted Statistics				
R-squared	0.343431	Mean dependent var		0.030316
Adjusted R-squared	0.329657	S.D. dependent var		0.323199
S.E. of regression	0.262013	Sum squared resid		9.817080
F-statistic	24.93294	Durbin-Watson stat		1.795143
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.060159	Mean dependent var		0.000554
Sum squared resid	11.05546	Durbin-Watson stat		2.163397

T-Test.

1) The regression results indicate that the Current Ratio (CR) has a coefficient of 0.127320, supported by a t-statistic of 2.250768 and a probability value of 0.0259. Because the probability falls below the 5% significance level, CR is shown to exert a positive and statistically significant influence on Return on Assets (ROA). This outcome implies that firms with healthier liquidity—demonstrated through their capacity to meet short-term financial commitments—are generally able to sustain smoother operational activities, which in turn facilitates stronger profitability performance.
2) The Debt to Equity Ratio (DER) yields a coefficient of 0.023285 with a t-statistic of 0.948956 and a probability of 0.3442. Since this value is higher than the 0.05 significance threshold, DER is not shown to have a statistically significant influence on Return on Assets (ROA). This indicates that shifts in leverage levels among the sampled companies did not substantially influence

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profitability during the study period, implying that financing structure was not a dominant determinant of earnings capacity.

3) The Total Asset Turnover (TATO) shows a coefficient of 0.161072, with a t-statistic of 7.868712 and a probability value of 0.0000. This extremely small probability confirms that TATO has a positive and statistically significant effect on Return on Assets (ROA). This result highlights that firms that utilize their entire asset base more effectively in driving sales tend to achieve stronger profitability performance, making TATO the most influential variable among the three financial ratios examined.

F-Test. The model's joint significance test yields an F-statistic of 24.93294 with a probability value of 0.000000, indicating a level far below the 5% threshold. This outcome verifies that the three explanatory variables—Current Ratio, Debt to Equity Ratio, and Total Asset Turnover—collectively exert a statistically meaningful influence on Return on Assets (ROA). Accordingly, the overall regression specification can be considered reliable and capable of explaining variations in profitability.

Determinant Coefficient Test. The model reports an Adjusted R-squared value of 0.329657, signifying that roughly 32.97% of the movement in ROA is attributable to the combined behavior of the Current Ratio, Debt to Equity Ratio, and Total Asset Turnover. The remaining 67.03% reflects the impact of other determinants not captured in this framework, which may include organizational characteristics—such as company scale, revenue growth, ownership patterns, and managerial capability—as well as external influences like macroeconomic shifts or regulatory changes.

The Effect of Liquidity (Current Ratio) on Profitability (Return on Assets). The estimation results indicate that the Current Ratio (CR) holds a coefficient of 0.127320, supported by a t-value of 2.250768 and a significance level of 0.0259. Because this value falls below the 5% cutoff, CR is shown to have a positive and statistically significant influence on ROA. This means that firms with a stronger liquidity position—demonstrated by higher CR values—tend to achieve better profitability outcomes, as sufficient near-term financial resources facilitate smoother operational function.

From a theoretical standpoint, a higher level of liquidity strengthens a company's capacity to fulfill its short-term liabilities, thereby giving the firm greater flexibility to engage in operational activities that contribute to profit generation.

The conclusion of this study is reinforced by the interpretation put forward by Diah Nurdiana (2018), who asserts that a firm's liquidity essentially reflects its immediate financial readiness—namely, its capability to discharge short-term obligations through the utilization of assets that can be quickly converted into cash. In other words, the stronger a company's liquid asset position, the more capable it is of maintaining operational stability and preventing financial strain in the short run. Firms with strong liquidity positions generally demonstrate greater financial stability and are able to finance their operational activities without depending on short-term borrowing, which may otherwise result in additional costs. Such stability, in turn, can contribute positively to overall profitability.

The Debt to Equity Ratio (DER) reveals a coefficient value of 0.023285, with a corresponding t-statistic of 0.948956 and a probability level of 0.3442. Because this probability far exceeds the 0.05 significance threshold, DER is concluded to have no statistically meaningful effect on Return on Assets (ROA). In practical terms, variations in a company's leverage structure did not contribute in

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a measurable way to differences in profitability over the study period.In other words, variations in leverage levels among the firms in the sample did not meaningfully affect their profitability during the study period. This outcome suggests that the degree of leverage among the firms included in the sample does not meaningfully influence their profitability.

From a theoretical standpoint, this finding implies that the degree of leverage or the composition of a firm's capital structure does not directly determine the profitability of the companies examined in this research.

Fianti et al. (2022) emphasize that when the Debt to Equity Ratio (DER) rises, it reflects an increasing reliance on external financing, meaning a larger share of the company's resources is supplied by creditors rather than by internal equity. Extensive reliance on borrowed capital can generate both beneficial and detrimental consequences for the firm. With borrowed funds, companies can operate profitably, and they can also reinvest the borrowed funds to generate profits. However, the larger the loan, the greater the fixed interest payments, which can ultimately reduce profits. If a company fails to repay its debt, its reputation will be at risk.

The Effect of Efficiency (Total Asset Turnover) on Profitability (Return on Assets). The estimation results show that the Total Asset Turnover (TATO) coefficient is 0.161072, accompanied by a t-statistic of 7.868712 and a probability value of 0.0000. Because the probability score is far below the 0.05 threshold, the empirical evidence strongly supports that TATO exerts a positive and significant influence on Return on Assets (ROA). In other words, companies that are able to drive higher sales from the assets they control consistently record stronger profitability outcomes. This result suggests that firms with higher efficiency in utilizing their asset base to generate sales tend to achieve greater levels of profitability.

From a theoretical standpoint, Total Asset Turnover (TATO) reflects the degree to which a company can utilize its overall asset base to generate sales. A higher TATO value demonstrates that the firm's assets are being employed more efficiently to support operational activities that produce revenue.

Darminto and Fuadati (2020) explain that this ratio illustrates how effectively a company employs its resources to carry out its operations, where these resources are utilized in an optimal manner to achieve the best possible outcomes. Commonly referred to as total asset turnover, this ratio evaluates how efficiently a firm is able to convert all of its assets into productive activity and revenue generation.

CONCLUSION

Based on the empirical examination of industrial companies listed on the Indonesia Stock Exchange during the 2021–2024 period, this study arrives at several key conclusions regarding the drivers of corporate profitability. The analysis reveals that liquidity conditions—captured through the Current Ratio (CR)—play a meaningful role in shaping firms' ability to generate returns. Higher liquidity levels are associated with improved Return on Assets (ROA), indicating that companies with stronger short-term financial capacity are better positioned to support operational activities that contribute to profit generation. Meanwhile, the leverage variable, proxied by the Debt to Equity Ratio (DER), does not demonstrate a statistically detectable influence on ROA. This finding implies that variations in capital structure, particularly the reliance on debt-based financing, were not a decisive factor in determining profitability within the industrial sector throughout the observed period. Conversely, the efficiency dimension—represented by Total Asset Turnover (TATO)—

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shows a clear positive and significant relationship with ROA. Firms that manage to convert their total asset base into sales more effectively consistently achieve higher levels of profitability. This underscores the pivotal role of asset utilization efficiency as a performance driver. When evaluated simultaneously, CR, DER, and TATO collectively exert a significant effect on ROA, confirming that the analytical model employed in this study is robust in explaining differences in profitability across industrial-sector firms. The Adjusted R-Squared value of 32.97% further indicates that just under one-third of the fluctuations in ROA can be attributed to these three financial indicators, while the remainder reflects the influence of other internal and external determinants not captured in the current model. Overall, the study highlights that liquidity and asset efficiency serve as key determinants of profitability in industrial-sector firms, whereas leverage does not play a significant role in shaping returns on assets.

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