



Analysis Of The Relationship Between Liquidity And Cost Structure To Financial Efficiency With Profitability As An Intervening Factor

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ABSTRACT

This study analyzes the relationship between liquidity and cost structure on financial efficiency with profitability as an intervening variable in manufacturing companies listed on the Indonesia Stock Exchange. Using a quantitative approach and secondary data from financial statements for the period 2019-2023, this study aims to explore the simultaneous effect of liquidity and cost structure on financial efficiency, as well as the mediating role of profitability. The results are expected to provide insights for investors and company management in making financial decisions, as well as add to the academic literature on factors that influence financial efficiency. By focusing on manufacturing companies, this study contributes to a more specific understanding of financial dynamics in the context of the industry.

INTRODUCTION

The development of the business world which is increasingly advanced has given rise to many different types of companies competing to obtain or maintain their level of existence. In accordance with the explanation that a company is part of an organization that is managed with a structure based on ownership of natural resources and human resources that it has to be able to produce goods or services that can then be used for economic activities, both distribution and consumption (Saputra & Meivira, 2020) . In accordance with the explanation, the purpose of the company can be seen from its financial management, but the purpose of this company is usually carried out to increase the value of the company in terms of financial efficiency (Muslichah & Hauteas, 2019) . For this reason, in this case, every company expects its finances to have a positive level of effectiveness so that the ultimate goal of the company is to achieve prosperity and also generate maximum profit for shareholders and owners of the company. Try businesses must have a special strategy that can achieve previously set goals, both goals related to financial efficiency and goals related to profit. A company that expects a high profit compared to the previous year so that the performance and happiness of each employee, manager, investor and various parties related to the company can be more interested and improve their work in order

to achieve predetermined goals. In accordance with this, every manager in the company has an obligation to organize and manage the appropriate strategy to create optimization of the value that exists in each company (Honi et al., 2020).

A company if it wants to achieve a good level of performance optimization then it needs to manage and organize the implementation of better financial management functions. For this reason, part of financial management is one of the important and vital things for the development of the company, especially for managing special strategies in terms of company optimization. Every decision related to financial management will have a direct or indirect impact on the value of the company (Prastiyo & Riduwan, 2020). If every company wants the value of its company to be higher, the company will also have a positive view that is increasingly better by its investors. Every investor who enters the company always looks at how the financial performance and level of financial efficiency are owned by each company so that this will increase the attractiveness of every investor who enters the company. For this reason, the value of the company related to financial efficiency is a very crucial or important factor and is very vital for the interests of investors because the value of the company is one of the indicators to assess whether the company is in a safe category or not as a whole in the capital market. The value of a company is a real picture of prospective investors to assess the position of a company (Naishwa et al., 2023). Company value can be likened to the price that potential investors are willing to pay if the company is sold. However, this value is determined by the company's financial performance, which focuses on financial efficiency indicators. Financial performance reflects the results achieved by the company in a certain period and describes the level of health of the company (Suparman, 2020). When a company's financial performance improves, the company's value in the eyes of potential investors also increases. Conversely, if financial performance declines, each investor's perception of the company can change significantly.

Financial performance is one of the indicators that can be used to assess or measure the financial condition of a company. In addition, this performance also functions to identify the company's ability to generate profits. Financial performance is part of management performance and this determines the value of the company, therefore the financial value and its benefits need to be estimated as much as possible to determine the level of company achievement and its functional status. The company's financial performance can also be an attraction to invest capital in the company so that if the level of financial efficiency can be achieved properly, its financial performance can also be said to be stable so that the company's goals can be achieved better. The company's financial efficiency can also be reported in a financial report and this is one of the pieces of information that can be conveyed to various parties as a form of management responsibility to the company owner and parties related to the company (Afni et al., 2023). Financial efficiency is part of each company's ability to describe how the company is able to complete each implementation of activities or programs to achieve goals, missions and visions. In addition, the company's effectiveness is also related to measuring the prospects for growth and financial development of each company based on the resources it has.

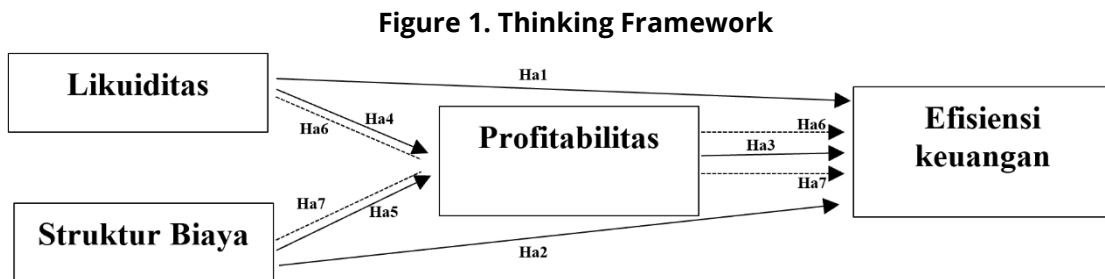
One of objective main set in establishment A company is to achieve benefits, which will give impact sustainable for every aspect company. Therefore that, management company need performance strategy proper finance For ensure smooth profitable business processes. For this reason, investors can have more interest in business activities carried out if the company's income can be in accordance with the target and its profits can be projected well in the future. A company's financial performance or financial efficiency is generally measured through financial ratios, which are often based on data obtained from the Indonesia Stock Exchange related to the financial performance of each company. This financial performance report is one of the considerations for investing in each company. Moreover, in the long term, each company has an obligation to provide maximum prosperity to each company owner so that maximizing financial efficiency is one of the important things in assessing the price of each share owned by the

company (Ginting, 2020) . Moreover, when the company is able to increase the stock price, this will increase the company's value in terms of assessing financial efficiency. This will have a view for each investor to assess that the finances used for production activities are able to rotate effectively to meet the profits they achieve.

In a competitive business world, a company's financial effectiveness is a major factor in ensuring the desire and growth of the business. Liquidity and Cost Structure are two crucial aspects that can affect a company's financial effectiveness. Liquidity reflects the company's ability to meet its short-term obligations, while the cost structure describes how the company manages operational expenses to achieve optimal efficiency. However, the relationship between liquidity and financial effectiveness and between cost structure and financial effectiveness is not always direct. Profitability acts as a mediating variable that can strengthen or increase the influence of both factors on financial effectiveness. A company with good liquidity does not necessarily have optimal financial effectiveness if its profitability is low. Likewise, an efficient cost structure can improve financial effectiveness, but the results can vary depending on the level of profitability achieved by the company. Although research on financial efficiency has been widely conducted, there are several gaps that can be used as a basis for this research. Most previous studies have focused more on the direct relationship between liquidity, cost structure, and profitability on firm value, without exploring in depth the role of mediating variables such as profitability. In fact, profitability has an important role as an indicator of management performance in optimizing the resources owned by the company to achieve financial efficiency goals.

Framework of Thinking

In accordance with the explanation in the theoretical basis developed for this research, the framework for thinking in this research can be described in Figure 1.



Source: Processed Data, 2025

LITERATURE REVIEW

Signaling Theory

Signaling Theory explains the concept of information imbalance that occurs between company management and external stakeholders, such as investors, customers, or other parties, who need information related to the company's condition. In this context, management acts as a signal sender to external parties to provide instructions regarding the company's condition, including future prospects and performance, which allows external parties to make a more accurate assessment of the company (Putri, 2018) . This information imbalance, if not addressed, can cause uncertainty or misunderstanding that is detrimental to both parties. Therefore, management strives to send clear and reliable signals, either through financial reports, strategy announcements, or other forms of communication, with the aim of reducing the information imbalance, as well as creating better trust and understanding in the eyes of external parties.

Liquidity

A company is said to be liquid if it is able to meet its financial obligations in a timely manner and has current assets or means of payment that are greater in value than its current liabilities (short-term debt) (Juwita et al., 2024) . Liquidity is an issue related to a company's ability to immediately meet its financial obligations (Cahyani & Sitohang, 2020) . Sources to meet short-term financial obligations come from liquid assets, such as current assets with a turnover of less than one year. These current assets are easier to liquidate than fixed assets, which have a turnover of more than one year (Rizaky & Dillak, 2020) . In general, liquidity refers to a company's ability to meet its short-term obligations and convert current assets into cash (Agustina et al., 2019) . Current assets generally include securities, receivables, and inventory, while current liabilities include accounts payable, short-term bank loans (less than one year), taxes, employee salaries, and other costs that must be paid immediately by the company. Liquidity indicators are tools used to measure a company's ability to meet its short-term obligations. There are several commonly used liquidity ratios, including:

Cost Structure

The success of a business or a business if strengthened by the ownership of costs. Ownership of costs in every business activity requires good management within the company through proper and appropriate management. The most important thing in this case is the management of costs used in production or those that are not charged for production but are used for other activities. Costs in a company are expenses that must be made and cannot be avoided because they will have a significant impact on the success of the business. In addition, another explanation explains that costs are part of the expenses that must be sacrificed in the form of money and the financing is usually done or not done (Windyata et al., 2021) . In addition, the amount of expenditure incurred by the company to obtain the number of goods or services is included in the cost category. The cost structure will be described in cost components which will then be sacrificed and distributed to the parts related to the business to achieve the sustainability of a business (Asmara et al., 2021) .

The structure of corporate financing is usually related to the composition of the costs that must be incurred to be able to achieve the production of goods or services (Windyata et al., 2021) . For this reason, the structure of corporate financing has an important role in the production activities of every business. Measuring the level of efficiency of a company's financing can be seen from the cost structure created by the company (Gunawan et al., 2020) . Every company or every business with certain things will have different cost structures according to the scale of the business they run. The financing structure is important because it can be controlled and managed so that profits can be achieved properly and business profits can be even better. The role of this cost structure can be used by business owners and related parties in purchasing production factors.

Cost structure is used to analyze the amount of expenditure required in each financing activity. These costs can be classified into various types based on their function and their relationship to the product or business being run. Moreover, in a company there are various main functions such as production, marketing, and administration as a whole (Gunawan et al., 2020) . Therefore, in this context, costs can be categorized into production costs and non-production costs. Production costs are related to the process of making products or providing services, while non-production costs are related to the sales and administration activities of products used by the public (Asmara et al., 2021) . Cost structure is an important component in a company's financial management, which includes all costs incurred to run business operations. Understanding the cost structure helps companies in strategic decision making, cost control, and pricing of products or services. The following are the main indicators in the cost structure:

Financial Efficiency

Financial efficiency is the ability of a company to manage and utilize financial resources optimally to achieve predetermined business goals (Gisca Dwi Desriyunia et al., 2023) . In a competitive business world, financial efficiency is not only an indicator of a company's health but also a major attraction for investors. By maximizing financial efficiency, companies can increase profitability, strengthen competitiveness, and create added value for shareholders.

Some of the main factors that affect financial efficiency include liquidity, cost structure, and profitability. Liquidity describes a company's ability to meet its short-term obligations. A high liquidity ratio indicates the stability of the company, which can increase the trust of investors and creditors (Fatimah & Idayati, 2024) . On the other hand, the cost structure, which includes fixed and variable costs, plays an important role in determining production and operational efficiency. Companies that are able to manage their cost structure optimally tend to obtain higher profit margins. Meanwhile, profitability, as a result of good financial management, reflects the company's performance while increasing its attractiveness to investors.

To improve financial efficiency, companies need to adopt effective management strategies. First, good liquidity management, such as maintaining the current ratio within optimal limits, can ensure the continuity of the company's operations. Second, controlling the cost structure through fixed and variable cost analysis can help companies identify areas of savings. Third, increasing profitability through resource optimization, product diversification, or market expansion can strengthen the company's financial position. (Aulia & Hubbansyah, 2024) . Although important, improving financial efficiency is not an easy task. Companies often face challenges such as market fluctuations, regulatory changes, and competitive pressures. In addition, inefficient cost structure management or inability to maintain liquidity can hinder the growth of the Company (Surachman et al., 2023) . Therefore, an integrated and sustainable approach is needed to ensure optimal financial efficiency.

Efficient financial management is an important foundation for a company's long-term success. By identifying and managing the various factors that affect financial efficiency, companies can strengthen their competitiveness while providing benefits to all stakeholders (Sigalingging et al., 2024) . In an ever-changing business world, focusing on financial efficiency will be key to facing challenges and achieving sustainable growth opportunities. Financial efficiency indicators are measuring tools used to assess how well an organization, especially in the context of local government, manages financial resources to achieve desired results. Here are some of the main indicators used in financial efficiency analysis:

Profitability

According to Mulyana (2018), profitability refers to a company's ability to generate profits. If a company is able to make significant profits, this indicates that the company's performance is quite good, and vice versa. Irawati (2006) stated that the profitability ratio is used to assess the extent to which a company is efficient in utilizing its resources and the company's ability to generate profits in a certain period, such as a quarter, semester, or year, as an indicator of the company's operational efficiency. Meanwhile, Brigham and Houston (2010) stated that profitability is the result of various policies and decisions taken by company management. Therefore, profitability describes the extent to which a company is able to generate net profit from its operational activities in a specified accounting period.

Profitability is an important factor that can be used by company owners and potential investors to assess company performance and identify its future growth potential (Tyas, 2020) . Company profitability can be analyzed using three main ratios, namely Net Profit Margin (NPM), Return on Assets (ROA), and Return on Equity (ROE). NPM measures the comparison between net profit after tax and total revenue, ROA compares net profit after tax with the amount of assets owned, while ROE shows the comparison between net profit and common shareholders' equity (Sriyono & Nabellah, 2022) .

The ratio that is often used to measure profitability is ROE (Return on Equity). ROE describes how much return is obtained by shareholders and shows the company's ability to generate profits from the capital owned. This ratio also provides an overview of the company's future prospects. The higher the ROE value, the higher the company's stock price, because this indicates that the returns that can be received by investors will be higher (Dewi, 2017) . Profitability indicators refer to the ratios used to assess the extent to which a company is able to generate profits from the income it receives. Here are some of the main profitability indicators along with explanations and formulas used to calculate them:

METHODS

This study uses a quantitative approach that focuses on numerical data to obtain results that can be measured objectively. This quantitative approach allows data processing in the form of numbers or statistics to identify existing patterns, trends, and relationships (Sugiyono, 2022) . Based on its research design, this study is included in the category of causal associative research, which aims to test the causal relationship between two or more variables. In this context, this study focuses on the influence of independent variables on mediating variables, as well as how both variables affect the dependent variable. This study aims to reveal whether and to what extent independent variables can affect dependent variables through the role of mediating variables, which provides a deeper understanding of the interactions between the variables involved.

Dependent variable is a variable that is influenced by the independent variable. This variable can also be interpreted as a variable that is influenced or is the result of the influence of the independent variable. (Sugiyono, 2022) . This study uses Financial Efficiency as the dependent variable. Financial efficiency refers to a company's ability to manage and utilize financial resources optimally to achieve predetermined business goals. (Gisca Dwi Desriyunia et al., 2023) . In a competitive business world, financial efficiency is not only an indicator of a company's health but also a major attraction for investors , to study This is the indicator used is OER (Operation Efficiency Ratio) .Independent variables are variables that are not influenced by other variables, and are considered to have the potential to influence or cause changes in the dependent variable. In this study, the independent variables are as follows:

Cost structure is the proportion of funds used by a company as a strategy to optimize its resources. Capital structure can be analyzed using FSCR and VSCR, while fixed costs are expenses that must be incurred by the company during production, and variable costs have fluctuations in the amount of expenditure. The formula for calculating variable costs is $VC = (TC - FC)$.Liquidity refers to the company's ability to meet short-term obligations by utilizing available capital resources. In this study, liquidity is measured using the Current Ratio (CR).

The mediating variable (intervening) is a variable that is between the dependent and independent variables, functioning to explain the relationship between the two. In this study, the mediating variable used is profitability, which describes the company's ability to generate profits from business activities carried out, taking into account the management of the capital owned. Profitability also reflects the effectiveness of company management in managing overall business operations. One measure for assessing profitability is Return on Equity (ROE), which is calculated by dividing net profit after tax by the company's total equity, providing an overview of how well the company is generating profits from the capital owned.

This research will be conducted on manufacturing companies listed on the Indonesia Stock Exchange (IDX) in the period 2019 to 2023, with data obtained from the official IDX website at www.idx.co.id. The data to be analyzed includes information relevant to the research objectives, and data collection is planned to begin in December 2024. By using official data sources from the IDX, this study aims to obtain valid and reliable information regarding companies listed in the manufacturing category in the specified period.

Data collection in this study was conducted using the documentation method, which involves collecting information from various literature sources as well as financial reports of manufacturing companies published by the Indonesia Stock Exchange through the website www.idx.co.id. The data used are annual data of manufacturing companies, which will be analyzed to measure several important indicators, such as capital structure, liquidity, company size, profitability, and company value. This information will be used to explore the relationship between these variables in the context of companies listed on the Indonesia Stock Exchange during the study period.

RESULTS

Data Description

Analysis is used to provide an overview or description of data, where the data obtained comes from the results of descriptive analysis whose results show the average (mean), highest value (maximum), lowest value (minimum) and standard deviation of each variable studied, both independent variables and dependent variables. The descriptive statistics of each variable studied are as follows:

Table 1. Descriptive Data

	X1_LIKE	X2_STRBI	Z_PRO	Y_EFKE
Mean	3.108668	3.575268	0.048004	0.049865
Median	2.385810	2.386030	0.035400	0.029200
Maximum	10.47979	15.82231	0.212200	0.423100
Minimum	0.874820	0.731920	0.001700	0.000200
Std. Dev.	2.399343	3.190628	0.040423	0.063488
Sum	233.1501	268.1451	3.600300	3.739900
Observations	75	75	75	75

Source: Data processed Eviews (2024)

Based on the descriptive statistical test, the calculation of minimum, maximum, average, and standard deviation values can be known. The minimum value is the lowest value of each variable, while the maximum value is the highest value of each research variable. The average value is used to see the average of each variable studied, while the standard deviation is the distribution of data used in the study.

Based on the results of descriptive statistics, it can be seen that the number of samples (N) or the total number of observations is 75 with an average value of 3,108, which can be interpreted as having a tendency for the average value to approach the minimum value so that the average Liquidity (LIK) value is quite low. This indicates that the company has the lowest ability to meet short-term obligations using the assets owned by the company when compared to other companies. While the maximum value of 10,479 shows that the company has the highest ability to meet its short-term obligations using the assets owned. The standard deviation value owned is 2,399 which is smaller than the average value. This shows that the distribution of liquidity data is even or has a range of data from one to another which is quite high.

Based on the results of descriptive statistics, it can be seen that the number of samples (N) or the total number of observations is 75 with an average value (mean) of the Cost Structure of 3,575 with a minimum value of 0.731 meaning that the minimum amount of company expenditure incurred to be able to achieve production of goods or production of services is 0.731. And the maximum cost is 15,822 with a data deviation from the average (standard

deviation) of 3,190. Costs in a company are expenses that must be made and cannot be avoided because they will have a significant impact on business success.

Based on the results of descriptive statistics, it can be seen that the number of samples (N) or the total number of observations is 75 with an average value (mean) of Profitability of 0.048 with a minimum value of 0.001 which indicates that there is a tendency for the average value to approach the minimum value and the maximum value is 0.212. The value of data deviation from the average (standard deviation) is 0.0.040 which indicates that the company can generate significant profitability compared to the amount of assets it owns. These results indicate that the higher the Profitability value that the company is able to achieve, this indicates that the company's performance is quite good.

Based on the results of descriptive statistics, it can be seen that the number of samples (N) or the total number of observations is 75 with an average value (mean) of Financial Efficiency of 0.049 with a minimum value of 0.000 which is close to 0, meaning that low financial efficiency means the ability of a company or organization to utilize its financial resources is not effective. And a maximum of 0.423, High financial efficiency means the ability of a company or organization to manage its expenses well so as to generate optimal income where the data deviation from the average (standard deviation) is 0.063.

After the LIK (X1), STRBI (X2), PRO (Z) and EFKE (Y) data are obtained, the data will be calculated using statistical methods, namely the panel data method and path analysis with data processing using the computerized Eviews program ver. 9.

Panel Data Model Test Analysis

Testing the linear regression equation with path analysis based on panel data, then the estimation or panel data model that can be used for testing is as follows:

Chow Test

The *chow-test* is used to determine which model will be selected in the estimation of the panel data regression model, whether *the common effect* or *fixed effect* model . This test is carried out using the F or chi-square statistical test with the following hypothesis:

H0: *Common effect model* is better than *fixed effect*

H1: *Fixed effect model* is better than *common effect model*

If the calculated F value (F-test) and chi-square test are smaller than $\alpha = 0.05$ (5%), then H0 is rejected and H1 is accepted. This indicates that the fixed effect model is still better than the common effect model in estimating the panel data regression method. Conversely, if H0 is accepted and H1 is rejected, which means that the common effect model is better than the fixed effect model in estimating the panel data regression method.

Table 2. Results of Chow Test Model 1

Effects Test	Statistics	df	Prob.
Cross-section F	0.411985	(14.58)	0.9652
Cross-section Chi-square	7.110387	14	0.9304

Source: Data processed Eviews (2024)

Table 3. Results of Chow Test Model 2

Effects Test	Statistics	df	Prob.
Cross-section F	0.955263	(14.57)	0.5085
Cross-section Chi-square	15.807612	14	0.3253

Source: Data processed Eviews (2024)

Based on the calculation results shown in tables 2 and 3, it can be concluded that from the chow-test, it can be seen that the probability value of the F test and chi-square test in model 1 is greater than $\alpha = 0.05$ (5%) which is 0.9304 so that H0 is accepted and H1 is rejected, which means that the common effect panel data model is better used in estimating the panel data regression method than the fixed effect model. And the probability value of the F test and chi-square test in model 2 is greater than $\alpha = 0.05$ (5%) which is 0.3253 so that H0 is accepted and H1 is rejected, which means that the common effect panel data model is better used in estimating the panel data regression method than the fixed effect model. So that the hausman test stage can be skipped because both common effect models are selected.

Lagrange Multiplier Test (LM-test).

Lagrange Multiplier is a test to determine whether the Random effect model or the Common effect model is most appropriate for models 1 and 2.

Table 4. Lagrange Multiplier Test Model 1

	Hypothesis Testing		
	Cross section	Time	Both
Breusch Pagan	2.956902	2.975813	5.932715
	(0.0855)	(0.0845)	(0.0149)

Source: Data processed Eviews (2024)

Table 5. Lagrange Multiplier Test Model 2

	Hypothesis Testing		
	Cross section	Time	Both
Breusch Pagan	0.096753	0.283158	0.379912
	(0.7558)	(0.5946)	(0.5377)

Source: Data processed Eviews (2024)

Based on the results of the Lagrange test calculations shown in tables 4 and 5, model 1 concludes that the Breusch-Pagan probability value is $0.0855 > \alpha = 0.05$ (5%), so the panel data regression method used in the study to estimate the factors that influence profitability is the common effect model (Common effect).

Likewise, with the results of the Lagrange model 2 test on the two panel data regression methods above, it can be concluded that the Breusch-Pagan probability value of 0.7558 is $> \alpha = 0.05$ (5%), so the panel data regression method used in the study to estimate the factors that influence Financial Efficiency is the common effect model (Common effect).

Conclusion of Model 1 and Model 2

Table 6. Conclusion of Panel Data Regression Model Testing

	Method	Testing	Results
	Chow- Test	Common Effect vs Fixed Effect	Common Effect
	Lagrange Test	Common Effect vs Random Effect	Common Effect

Source: Data processed Eviews (2024)

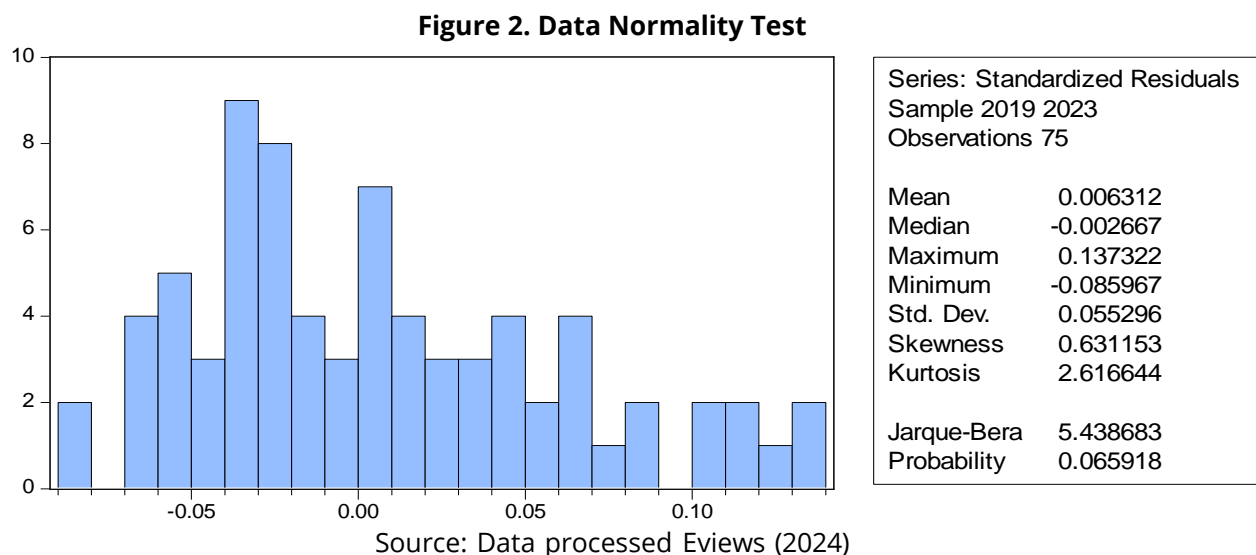
Based on the results of paired testing using the Chow test, the Lagrange test on the two panel data regression methods above, it can be concluded that the Common Effect model in the panel data regression method is used further to estimate and analyze the factors that influence Profitability and Financial Efficiency which are the samples in the study.

Classical Assumption Test Analysis

The classical assumption test is a prerequisite test when using linear regression analysis. These tests include the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. If these assumptions are violated, for example the regression model is not normal, multicollinearity occurs, heteroscedasticity occurs or autocorrelation occurs. The following will discuss each classical regression assumption test as follows:

Normality Test

This test is conducted to determine whether the data used is found or has a normal distribution or in other words can represent a population with a normal distribution. This test uses the histogram graph method and the Jarque-Bera statistical test (JB test) as follows:



The histogram above shows a probability value of 0.0659, looking at the number of independent variables we use, in this case 3 independent variables, and the significance value we use, in this case 0.05 or 5%.

If $p\text{-value} < \alpha$, then H_0 is rejected.

If $p\text{-value} > \alpha$, then H_0 is accepted

The conclusion is that with a 95% confidence level, it can be said that the error term is normally distributed. The results of the normality test above indicate that the data is normally distributed because the probability value is $0.0659 > 0.05$ so that it does not need to be transformed so that the data is normally distributed.

Multicollinearity Test

This multicollinearity test aims to test and find out whether in the processed regression model there is a correlation or relationship between independent variables. Testing the problem of multicollinearity can be seen from the correlation matrix value and can be seen in the table below:

Table 6. Multicollinearity Test

	X1_LIKE	X2_STRBI	Z_PRO
X1_LIKE	1,000,000	-0.193310	-0.143913
X2_STRBI	-0.193310	1,000,000	0.138735
Z_PRO	-0.143913	0.138735	1,000,000

Source: Data processed Eviews (2024)

The table above shows that the correlation coefficient value between independent variables is less than 0.80, thus the data in this study can be identified as not having a multicollinearity problem between the independent variables and it can be said that this model can be used to estimate the influence of independent variables on the dependent variable.

Heteroscedasticity Test

The heteroscedasticity test aims to test whether in the regression model formed there is inequality of variance from the residual regression model. Good data is homoscedasticity data. The Glesjer test can identify heteroscedasticity problems from the calculation results that identify no heteroscedasticity because the regression coefficient value of the independent variable is not significant to the Dependent Variable RESABS. The hypothesis used is:

H0: There is no heteroscedasticity problem

H1 : There is a heteroscedasticity problem

Table 7. Heteroscedasticity Test for Model 1

R-squared	0.046154
Adjusted R-squared	0.019658
SE of regression	0.025626
Sum squared residual	0.047282
Log likelihood	169.9217
F-statistic	1.741935
Prob(F-statistic)	0.182482

Source: Data processed Eviews (2024)

Table 8. Heteroscedasticity Test for Model 2

R-squared	0.125052
Adjusted R-squared	0.088083
SE of regression	0.043151
Sum squared residual	0.132200
Log likelihood	131.3644
F-statistic	3.382575
Prob(F-statistic)	0.022799

Source: Data processed Eviews (2024)

The results of the heteroscedasticity test for Model 1 can be concluded that H0 is accepted because the probability results for each independent variable are 0.18248 which is greater than alpha (0.05), or in other words the regression coefficient value of the independent variable, so that the data in this regression model can be said to have no heteroscedasticity problems.

The results of the heteroscedasticity test can be concluded that H1 is accepted because the probability results of each independent variable are 0.0227 which is smaller than alpha (0.05), or in other words the value of the regression coefficient of the independent variable, so that the data in this regression model can be said to have a heteroscedasticity problem.

Autocorrelation Test

The Autocorrelation Test aims to test whether in a linear regression model there is a correlation between the disturbance error in period t and the error in period t-1 (previously). Autocorrelation arises because consecutive observations over time are related to each other. This problem arises because the residuals (disturbing errors) are not free from one another.

observation to another observation. This is often found in time series data due to disturbances in the same individual/group in the next period. The hypothesis used is:

If the probability value of Obs*R-squared < significance value ($\alpha = 0.05$) then H0 is rejected or it can be concluded that autocorrelation occurs in the model. If the probability value of Obs*R-squared > significance value ($\alpha = 0.05$) then H0 is accepted or it can be concluded that there is no autocorrelation in the model.

Table 9. Autocorrelation Test of Model 1

R-squared	0.083430
Adjusted R-squared	-0.008227
SE of regression	0.033544
Sum squared residual	0.045009
Log likelihood	91.56763
F-statistic	0.910242
Prob(F-statistic)	0.467300

Source: Data processed Eviews (2024)

Table 10. Autocorrelation Test of Model 1

R-squared	0.159932
Adjusted R-squared	0.052231
SE of regression	0.031841
Sum squared residual	0.039539
Log likelihood	94.48313
F-statistic	1.484967
Prob(F-statistic)	0.216912

Source: Data processed Eviews (2024)

The results of the Model 1 autocorrelation test can be concluded that H0 is accepted because the probability results of each independent variable are 0.4673 which is greater than alpha (0.05), or in other words the value of the regression coefficient of the independent variable, so that the data in this regression model can be said to have no autocorrelation problems.

The results of the Model 2 autocorrelation test can be concluded that H0 is accepted because the probability results of each independent variable are 0.2169 which is greater than alpha (0.05), or in other words the value of the regression coefficient of the independent variable, so that the data in this regression model can be said to have no autocorrelation problems.

To handle the problem of heteroscedasticity (non-constant error variance) and serial correlation (autocorrelation) in the panel data model, which can affect the accuracy of the coefficient estimates and standard errors of the panel data model, the FGLS (Feasible Generalized Least Squares) PCSE (Panel-Corrected Standard Errors) estimator can be used. FGLS is an estimation method used to overcome the problem of heteroscedasticity and autocorrelation. FGLS tries to correct errors in the Ordinary Least Squares (OLS) model by using the information available in the panel data to correct bias or inefficiency due to these problems.

Path Analysis

Table 10. Model 1 Coefficient Equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.039272	0.006799	5.775876	0.0000
X1_LIKE	-0.000368	0.001539	-0.239109	0.8117
X2_STRBI	0.002054	0.000857	2.397742	0.0191

Source: Data processed Eviews (2024)

The calculation results (output) of the equation are as follows:

$$Z = 0.0392 - 0.0003 X1 + 0.0020 X2 + e$$

Based on the equation above, it can be interpreted as follows:

- a) The Effect of Liquidity on Profitability based on the table above coefficient -0.0003 with a negative sign. This shows that -0.0003 Profitability, is determined by Liquidity.
- b) The Effect of Cost Structure on Profitability based on the table above coefficient 0.0020 with a positive sign. This shows that 0.0020 Profitability, is determined by the Cost Structure.

Table 11. Model 2 Coefficient Equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.056698	0.010385	5.459772	0.0000
X1_LIKE	-0.006391	0.001293	-4.941082	0.0000
X2_STRBI	0.003198	0.001334	2.398028	0.0191
Z_PRO	-0.180310	0.075922	-2.374950	0.0203

Source: Data processed Eviews (2024)

The calculation results (output) of the equation are as follows:

$$Y = 0.0566 - 0.0063 X1 + 0.0031 X2 - 0.1803 Z + e$$

Based on the equation above, it can be interpreted as follows:

- a) The Effect of Liquidity on Financial Efficiency based on the table above, the coefficient is -0.0063 with a negative sign. This shows that -0.0063 Financial Efficiency is determined by Liquidity.
- b) The Effect of Cost Structure on Financial Efficiency based on the table above, the coefficient is 0.0031 with a positive sign. This shows that 0.0031 Financial Efficiency is determined by the Cost Structure.
- c) The Effect of Profitability on Financial Efficiency based on the table above the coefficient is -0.1803 with a negative sign. This shows that -0.1803 Financial Efficiency is determined by Profitability.

The magnitude of the simultaneous influence of Liquidity and Cost Structure on Profitability, as well as Liquidity, Cost Structure, and Profitability on Financial Efficiency, is obtained from the results of data processing which can be seen in the following table 11:

Table 12. Determination Coefficient of Model 1

R-squared	0.074068	Mean dependent variable	0.059634
Adjusted R-squared	0.048347	SD dependent var	0.047332
SE of regression	0.039719	Sum squared residual	0.113589
F-statistic	2.879732	Durbin-Watson stat	2.601088
Prob(F-statistic)	0.062640		

Source: Data processed Eviews (2024)

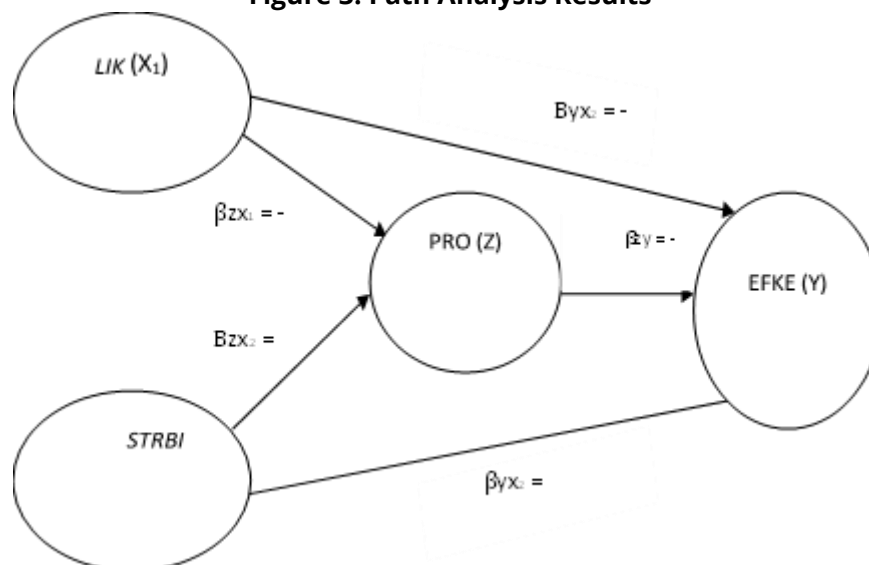
The magnitude of the Rsquare (R2) figure is 0.0740. This figure shows that the influence of the use of Liquidity and Cost Structure simultaneously on Profitability is relatively small, namely 7.40%. The remaining 92.60% is influenced by other factors. In other words, the Profitability variable can be explained using the Liquidity and Cost Structure variables of 7.40% while the influence of 92.60% is explained by other variables outside this research model.

Table 13. Determination Coefficient of Model

R-squared	0.292196	Mean dependent variable	0.067165
Adjusted R-squared	0.262289	SD dependent var	0.061925
SE of regression	0.056823	Sum squared residual	0.229253
F-statistic	9.770097	Durbin-Watson stat	1.497000
Prob(F-statistic)	0.000018		

Source: Data processed Eviews (2024)

The value of R-square (R²) is 0.2921. This figure shows that the influence of the use of Liquidity, Cost Structure, and Profitability simultaneously on Financial Efficiency is 29.21%. The remaining 70.89% is influenced by other factors. In other words, the Financial Efficiency variable can be explained using the Liquidity, Cost Structure, and Profitability variables of 29.21% while the influence of 70.89% is explained by other variables outside this research model. Based on the results of the sub-structure path analysis test 1 (X1 X2 and Y to Z) each obtained the following values:

Figure 3. Path Analysis Results

Source: Processed Data, 2025

Based on the path diagram in Figure 3 above, the direct influence, indirect influence and total influence can be explained as follows:

Direct effect

- The effect of LIK on PRO is $\beta_{zx1} = -0.0003$
- The effect of STRBI on PRO is $\beta_{zx2} = 0.0020$
- The effect of LIK on EFKE is $\beta_{yx1} = -0.0063$
- The effect of STRBI on EFKE is $\beta_{yx2} = 0.0032$
- The effect of PRO on EFKE is $\beta_{zy} = -0.1803$

Indirect effect

- The effect of LIK on EFKE through PRO is $\beta_{zx1} (-0.0003) \times \beta_{zy} (-0.1803) = 0.00005$
- The effect of STRBI on EFKE through PRO is $\beta_{zx2} (0.0020) \times \beta_{zy} (-0.1803) = -0.00036$

Total effect

- a) The total influence of LIK on PRO is -0.0003. The indirect influence of LIK on EFKE through PRO is 0.00005, so the total influence is -0.00025.
- b) The total effect of STRBI on PRO is 0.0020. The indirect effect of STRBI on EFKE through PRO is -0.00036, so the total effect is 0.0016.

The influence of LIK on PRO

Ho: $\beta_{zx1} = 0$ (there is no significant direct effect of LIK on PRO)

Ha : $\beta_{zx1} \neq 0$ (there is a significant direct influence of LIK on PRO)

After testing the research hypothesis above and based on the results of computer calculations (table 10), the Significance t of variable X1 was obtained at 0.8117, which is greater than the real level or $0.8117 > 0.05$. Therefore, it can be concluded that Ha is rejected or Ho is accepted, so there is no significant direct influence of LIK on PRO.

The influence of LIK on EFKE

Ho: $\beta_{zx1} = 0$ (there is no significant direct effect of LIK on EFKE)

Ha: $\beta_{zx1} \neq 0$ (there is a significant direct influence of LIK on)

After testing the research hypothesis above and based on the results of computer calculations (table 11), the Significance t of variable X1 was obtained at 0.0000, which is smaller than the real level or $0.0000 < 0.05$. Therefore, it can be concluded that Ho is rejected or Ha is accepted, so there is a significant direct influence of LIK on EFKE.

The Impact of STRBI on PRO

Ho: $\beta_{zx2} = 0$ (there is no significant direct effect of STRBI on PRO)

Ha : $\beta_{zx2} \neq 0$ (there is a significant direct effect of STRBI on PRO)

After testing the research hypothesis above and based on the results of computer calculations (table 10), the Significance t of variable X2 was obtained at 0.0191, which is smaller than the real level or $0.0191 < 0.05$. Therefore, it can be concluded that Ho is rejected or Ha is accepted, so there is a significant direct influence of STRBI on PRO.

The influence of STRBI on EFKE

Ho: $\beta_{zx2} = 0$ (there is no significant direct effect of STRBI on EFKE)

Ha: $\beta_{zx2} \neq 0$ (there is a significant direct effect of STRBI on EFKE)

After testing the research hypothesis above and based on the results of computer calculations (table 11), the Significance t of variable X2 was obtained at 0.0191, which is smaller than the real level or $0.0191 < 0.05$. Therefore, it can be concluded that Ho is rejected or Ha is accepted, so there is a significant direct influence of STRBI on EFKE.

The influence of PRO on EFKE

H5o : $\beta_{zy} = 0$ (there is no significant direct influence of PRO on EFKE)

H5a : $\beta_{zy} \neq 0$ (there is a significant direct influence of PRO on EFKE)

After testing the research hypothesis above and based on the results of computer calculations (table 11), the Significance t of the Z variable was obtained at 0.0203, which is smaller than the real level or $0.0203 < 0.05$. Therefore, it can be concluded that Ho is rejected or Ha is accepted, so there is a significant direct influence of PRO on EFKE.

Sobel Test Analysis

The Sobel test is intended to test the significance of indirect influence, by calculating the t value of the coefficient of the exogenous variable and the mediating variable, the calculated t value is compared with the t table. If the calculated t value $>$ t table value, it can be concluded that there is a mediation effect. The Sobel test conducted in this study is as follows:

LIK to EFKE via PRO

The results of the path analysis show that LIK has a direct effect on EFKE and also has a direct effect on PRO. To determine the effect of LIK on EFKE through PRO, it can be tested using the Sobel test as follows:

Figure 4. Sobel test results X1 against Z through Y

Indirect Influence	T Count	T Table	Conclusion	P-value	Hypothesis Answer
T Calculate the Indirect Effect of X1 on Z Through Y	0.2650	1,992	0.2650 < 1.992	0.791 > 0.05	Accept H0 or Not Significant

Source: Data processed Eviews (2024)

The calculation results obtained a p-value of 0.791 greater than the real level or $0.791 > 0.05$. So it can be concluded that there is no indirect influence between LIK and EFKE through PRO. In accordance with the results of the analysis above PRO can be an intermediary from LIK to EFKE where H_a is rejected, H_0 is accepted.

STRBI against EFKE through PRO

The results of the path analysis show that STRBI has a direct effect on EFKE and also has a direct effect on PRO. To determine the effect of STRBI on EFKE through PRO, it can be tested using the Sobel test as follows:

Figure 5. Sobel test results X2 against Z through Y

Indirect Influence	T Count	T Table	Conclusion	P-value	Hypothesis Answer
T Calculate the Indirect Effect of X2 on Z Through Y	-1.7220	1,992	-1.321 < 1.992	0.085 > 0.05	Accept H0 or Not Significant

Source: Data processed Eviews (2024)

The calculation results obtained a p-value of 0.085 greater than the real level or $0.085 > 0.05$. So it can be concluded that there is no indirect effect of STRBI on EFKE through PRO. In accordance with the results of the analysis above PRO can be an intermediary from STRBI to EFKE where H_a is rejected, H_0 is accepted.

Discussion of Research Results. Based on the results of the path analysis and Sobel test, it can be described as follows:

Table 14. Interpretation of Research Results

Variables independent - dependent	Influence Direct
LIKE - PRO	-0.0003
STRBI - PRO	0.0020
LIKE - EFK	-0.0063
STRBI - EFK	0.0032
PRO - EFK	-0.1803
Variables independent - dependent	Influence No Direct
LIKE - PRO - EFK	0.00005
STRBI - PRO - EFK	- 0.00036

Influence Direct + Influence Indirect	Influence Total
(LIKE - EFKE) + (LIKE - PRO - EFKE)	-0.00025
(STRBI - EFKE) + (STRBI - PRO - EFKE)	0.0016

Source: Data processed Eviews (2024)

Table 15. Summary of Research Hypothesis Results

Variables Independent - Dependent	Sig	Influence Direct
LIKE - PRO	0.8117 > 0.05	Not Significant and No Influential Direct
STRBI - PRO	0.0191 < 0.05	Significant And Influential Direct
LIKE - EFK	0.0000 < 0.05	Significant And Influential Direct
STRBI - EFK	0.0191 < 0.05	Significant And Influential Direct
PRO - EFK	0.0203 < 0.05	Significant And Influential Direct
Variables Independent - Intervening - Dependent		Influence No Direct (Mediation)
LIKE - PRO - EFKE	0.791 > 0.05	Not Significant and No Indirect Impact
STRBI - PRO - EFK	0.085 > 0.05	Not Significant and No Indirect Impact

Source: Data processed Eviews (2024)

DISCUSSION

The influence of LIK on PRO

There is an insignificant direct effect of LIK on PRO with a regression parameter coefficient of -0.0003. This is in line with research conducted by Raheman A., & Nasr, M. (2007) which states that Liquidity has a negative and insignificant effect on Profitability (Raheman & Nasr, 2007) . If the relationship is negative in some cases, the company may choose to retain earnings for reinvestment or to pay debts.

The influence of LIK on EFKE

There is a significant direct influence of LIK on EFKE in companies with a regression parameter coefficient of -0.0063. In a study conducted by (Mousa & Ali, 2014) . They found that companies that maintain healthy liquidity levels tend to be more efficient in managing their finances, which in turn improves overall financial performance. This study shows that liquidity has a significant influence on financial efficiency.

The Impact of STRBI on PRO

There is a significant direct effect of STRBI on PRO with a regression parameter coefficient of 0.0020. This is in line with research conducted by Ghosh, S., & Jain, PK (2000). They found that an efficient cost structure, especially fixed cost management, has a significant effect on the profitability of manufacturing companies in India. This study shows that companies that can manage fixed costs well have higher profitability.

The influence of STRBI on EFKE

There is a significant direct effect of STRBI on EFKE with a regression parameter coefficient of 0.0032. In a study conducted by Wahyuni, R. (2019). Examining the effect of the operating cost budget on financial efficiency. The results of the study indicate that the operating cost budget has a significant effect on the company's financial efficiency. Good management of the cost structure allows companies to achieve economies of scale, which in turn increases financial efficiency by lowering average costs and increasing profit margins

The influence of PRO on EFKE

There is a significant direct effect of PRO on EFKE with a regression parameter coefficient of -0.1803. This is in line with research conducted by Murcia, S., Wulandari, D., & Syafii, A. (2013). This study shows that profitability has a positive effect on a company's bond rating. Companies with high profitability tend to have better bond ratings, reflecting higher financial efficiency.

The influence of LIK on EFKE through PRO

There is an insignificant indirect effect of LIK on EFKE through PRO with a regression parameter coefficient of 0.00005 and a total effect of -0.00025. The results of this study are supported by research conducted by (Amalia & Sari, 2019) . The results of the analysis of the effect of liquidity and profitability on the company's financial efficiency and found that although liquidity affects operational efficiency, its effect through profitability is not significant

The influence of STRBI on EFKE through PRO

There is an insignificant indirect effect of STRBI on EFKE through PRO with a regression parameter coefficient of -0.00036 and a total effect of 0.0016. The results of this study differ from the research conducted by Sembiring et al. (2023). showed that capital structure, financial efficiency, and company size affect the profitability of manufacturing companies in the food and beverage industry sector in Indonesia. The effect of cost structure on financial efficiency through profitability can be insignificant if the company does not manage costs optimally or does not take into account external factors that affect their financial performance

CONCLUSION

1. Liquidity has a negative and insignificant effect on Profitability. This can be explained by the possibility that companies prefer to retain earnings for reinvestment or debt repayment purposes, which can affect the relationship between the two variables.
2. Liquidity has been shown to have a negative and significant effect on Financial Efficiency. This suggests that companies that maintain healthy levels of liquidity tend to be more efficient in managing their finances, which ultimately improves overall financial performance.
3. Cost Structure has been proven to have a positive and significant effect on Profitability. This shows that an efficient cost structure, especially in managing fixed costs, has a significant effect on the company's profitability. This study shows that companies that are able to manage fixed costs well tend to have higher profitability.
4. Cost Structure is proven to have a positive and significant effect on Financial Efficiency. This can be explained by the effect of the operating cost budget on financial efficiency. The study shows that good cost structure management allows companies to achieve economies of scale, which in turn improves financial efficiency by lowering average costs and increasing profit margins.
5. Profitability is proven to have a positive and significant effect on Financial Efficiency. This shows that profitability has a positive effect on the company's bond rating, which in turn reflects higher financial efficiency. The difference in the direction of the relationship may be

due to differences in the industry context and variables that affect profitability and financial efficiency.

6. Liquidity has a negative and insignificant effect on Financial Efficiency through Profitability. This can be explained by the evidence that liquidity affects operational efficiency, its effect through profitability is not significant. Therefore, although liquidity has the potential to affect financial efficiency, the indirect effect through profitability is not proven significant in this study.
7. Cost Structure is proven to have a positive and insignificant effect on Financial Efficiency through Profitability. This shows that capital structure, financial efficiency, and company size affect the profitability of manufacturing companies in the food and beverage industry sector in Indonesia. The effect of cost structure on financial efficiency through profitability in this study is not significant, which may be caused by suboptimal cost management by the company or external factors that affect the company's financial performance.

LIMITATION

Based on this research, there are several research limitations, including the following:

1. This study does not consider external factors such as macroeconomic conditions, regulatory changes, or market fluctuations that may affect the relationship between the variables analyzed. These factors may affect the company's decisions in managing liquidity, cost structure, and profitability, which may cause different research results if external factors are taken into account.
2. This study only focuses on liquidity, cost structure, profitability, and financial efficiency. However, there are many other factors that can affect a company's financial efficiency and profitability, such as risk management, technological innovation, and internal company policies. These variables are not included in the research model, which limits the generalization of the findings to companies with different characteristics.

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