

## Liquidity, Leverage, Activity, and Profitability Ratios on Financial Distress: Evidence from LQ45 Manufacturing Companies

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### Keywords

Financial Distress (Altman Z-Score) ; Liquidity; Leverage; Activity; Profitability

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### ABSTRACT

This research examines the effect of liquidity, leverage, activity, and profitability on financial distress among manufacturing companies included in the LQ45 Index in Indonesia during 2020–2024. This research used a quantitative explanatory approach to investigate the relationship between the variables. The analysis relied on secondary data obtained from the audited annual reports of 7 manufacturing companies selected by purposive sampling method, resulting in a balanced panel dataset consisting of 35 observations. Financial distress was measured using the Altman Z-Score, while TATO, ROA, DER, and CR were employed as the independent variables. To evaluate both the individual and combined effects of these variables on financial distress, panel data regression analysis was conducted using the CEM, supported by t-test and F-test analysis. The results reveal that liquidity ( $t = 2.426$ ;  $p = 0.022$ ) and profitability ( $p = 0.070$ ) have positive and statistically significant correlations with the Altman Z-Score, indicating that stronger liquidity and higher profitability mitigate financial distress risk, with profitability emerging as the dominant predictor. Conversely, leverage and asset efficiency show no significant individual effects, suggesting that manufacturing firms can adjust their capital structure and asset utilization without necessarily increasing financial distress risk. However, when all four ratios are considered simultaneously, they collectively explain a substantial portion of the variation in financial distress ( $F = 3.797$ ;  $p = 0.013$ ;  $R^2 = 33.61\%$ ). These findings highlight that financial ratio indicators, particularly those related to liquidity and profitability, are useful for evaluating the financial health of established manufacturing firms in Indonesia's LQ45 Index.

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### INTRODUCTION

During the period 2020–2024, the Indonesian manufacturing sector experienced significant changes due to increasingly dynamic and uncertain market conditions. Several factors, including supply chain disruptions caused by the pandemic, geopolitical tensions, rising energy costs, and inflationary pressures, continued to affect manufacturing companies listed on the LQ45 Index. These challenges influenced both financial and operational performance by making raw material procurement more difficult, increasing production costs,

and reducing consumer demand. As one of the most important sectors in Indonesia's economy, the manufacturing industry's ability to respond and adapt to these pressures serves as an important indicator of the country's overall economic stability.

According to Statistics Indonesia (BPS, 2024), the manufacturing sector contributed 18.98% to Indonesia's Gross Domestic Product (GDP) in 2024, making it the largest contributor to the national economy. Despite this important role, the sector showed notable fluctuations during the 2020–2024 period. Following the COVID-19 pandemic, Indonesia's economy contracted by 2.93% in 2020. Although conditions improved in 2021 and 2022, the recovery trend began to slow, with manufacturing growth decreasing to 4.64% in 2023 and further declining to 4.43% in 2024. In addition, the Manufacturing Purchasing Managers' Index (PMI) remained below the 50-point threshold for five consecutive months, from July to November 2024, reflecting continued weakness in the sector. At the same time, rupiah depreciation increased the cost of imported raw materials, while household consumption remained relatively weak. These conditions created greater financial pressure on manufacturing companies and increased their exposure to financial distress. Financial distress refers to a condition in which a company experiences difficulty in meeting its financial obligations and, if prolonged, may eventually lead to bankruptcy.

An examination of seven manufacturing companies included in the LQ45 Index shows that each company responded differently to the economic challenges during this period. For instance, PT Gudang Garam Tbk (GGRM) experienced a substantial decline in net profit, falling by more than 87% from Rp7.64 trillion in 2020 to Rp980 billion in 2024. Similar conditions were observed in PT Unilever Indonesia Tbk (UNVR), where net profit declined from Rp7.16 trillion to Rp3.37 trillion, while PT Semen Indonesia Tbk (SMGR) reported a profit reduction of around 71% over the same period. These persistent downward trends suggest that prolonged economic uncertainty can gradually weaken corporate financial performance. In contrast, PT Indofood Sukses Makmur Tbk (INDF) was still able to generate a net profit of Rp13.07 trillion in 2024. The variation in performance among these companies indicates that firms with stronger financial conditions tend to be more capable of coping with unstable economic environments. Therefore, identifying the financial indicators that distinguish financially healthy companies from those facing distress is an important consideration for both investors and corporate managers.

Financial ratios can be used to explain the likelihood of financial distress. One of the most important aspects is liquidity, which reflects a company's ability to meet its short-term obligations. Previous studies generally show that firms with higher liquidity tend to have stronger financial performance and a lower risk of insolvency. Another factor is leverage, which describes the extent to which a company relies on debt financing. A high level of debt can weaken financial stability, especially when liquidity is low, although some firms with strong liquidity are still able to manage high leverage without facing serious financial problems. Asset efficiency is also important because it indicates how effectively a company utilizes its assets to generate sales or revenue. This aspect became particularly relevant during the COVID-19 period, when many companies were forced to adjust operations due to sudden changes in market demand and external conditions. In addition, profitability is widely regarded as one of the most reliable indicators of financial health. Profitability, which measures a company's ability to generate earnings from its assets, helps distinguish financially resilient firms from more vulnerable ones. Companies with stronger profitability generally have greater financial flexibility and are better prepared to withstand periods of economic crisis.

To measure financial distress, this study employs the Altman Z-Score model because it is widely recognized as a reliable predictive tool. Developed using statistical techniques, the model can predict the likelihood of bankruptcy with an accuracy level of approximately 95% within one year prior to failure. Previous empirical studies have shown that the Altman Z-Score

performs better than many alternative prediction models and has also proven effective in assessing the financial condition of companies in Indonesia. Supporting evidence for the use of this model is discussed in the related literature. Furthermore, prior research identifies liquidity, leverage, and profitability as significant predictors of financial distress. This relationship has been found to be relatively consistent across different types of businesses, ranging from large corporations to small and medium-sized enterprises.

This research aims to investigate the influence of liquidity, leverage, asset efficiency (activity), and profitability on financial distress in manufacturing companies included in the LQ45 Index during the 2020–2024 period. The study evaluates not only the individual effects of each financial ratio but also their combined contribution in explaining the level of financial distress experienced by firms. To achieve this objective, five hypotheses were developed. Four hypotheses examine whether each financial ratio has a statistically significant effect on financial distress, while the fifth hypothesis tests whether all four ratios simultaneously contribute to explaining financial distress among manufacturing companies listed on the Indonesia Stock Exchange and included in the LQ45 Index.

## **METHOD**

This study adopted a quantitative research approach using descriptive and inferential methods. The descriptive method was used to describe the financial characteristics and performance of manufacturing companies included in the LQ45 Index during the 2020–2024 period, while the inferential approach was applied to test the hypotheses regarding the influence of financial ratios on financial distress.

The study used archival data obtained from annual financial statements of companies listed in the LQ45 Index. The reports covering the 2020–2024 period were collected from the Indonesia Stock Exchange (IDX) and company websites. Initially, ten manufacturing companies in the LQ45 Index were considered as the population. A purposive sampling technique was applied based on several criteria, including continuous inclusion in the LQ45 Index for at least three years during the observation period, availability of audited annual reports, financial statements presented in Indonesian Rupiah, uninterrupted listing status without delisting or bankruptcy, completeness of financial disclosures, and a declining net profit trend for at least two consecutive years as an indication of potential financial pressure. After applying these criteria, seven companies were selected, resulting in a balanced panel dataset of 35 observations.

Financial distress was measured using the Altman Z-Score model. Four financial ratios were used as independent variables. Liquidity was proxied by the current ratio (CR), calculated as current assets divided by current liabilities. Leverage was measured using the debt-to-equity ratio (DER), calculated as total liabilities divided by shareholders' equity. Activity was represented by total asset turnover (TATO), measured by net sales divided by total assets. Profitability was proxied by return on assets (ROA), calculated as net income divided by total assets.

Panel data regression analysis was used to examine the effect of the independent variables on financial distress. A t-test was applied to assess the partial effects of each financial ratio, while an F-test was used to evaluate their simultaneous influence. This approach was used to identify the most influential financial ratios in explaining financial distress among manufacturing companies in the LQ45 Index and to provide empirical evidence relevant for managers, investors, creditors, and policymakers in assessing corporate financial conditions.

## RESULT AND DISCUSSION

### Descriptive Statistics

Descriptive statistical analysis was used to summarize the data distribution and highlight the main characteristics of the variables examined in this study. The dataset consisted of 35 panel observations collected from 7 manufacturing companies over a five-year observation period. This analysis provides an overview of the data and helps explain the general patterns of the variables included in the research.

**Table 1. Descriptive Statistics of Research Variables (n=35)**

Statistik	Y (Z-Score)	X1 (CR)	X2 (DEiR)	X3 (TATO)	X4 (ROA)
Mean	55374.01	2.146311	1.192679	1.164506	0.108920
Median	12522.43	1.799185	0.857245	1.062118	0.070976
Maksimum	677168.1	4.908079	6.465892	2.317043	0.348851
Minimum	1714.269	0.446362	0.145525	0.438508	0.010023
Std. Dev.	121112.7	1.222056	1.327142	0.674180	0.087953
Obs.	35	35	35	35	35

Table 1 provides the descriptive statistics for 35 observations obtained from 7 manufacturing companies listed in the LQ45 Index during the period of 2020–2024. The results show that the average liquidity level, measured by the CR, is 2.15, indicating that the companies generally have adequate liquid assets to fulfill their short-term obligations. Meanwhile, the average DER is 1.19, suggesting that debt financing plays an important role in the companies' capital structure. The standard deviation value of 1.33 also reflects a considerable variation in leverage levels among the sampled companies.

The descriptive results show that the mean value of TATO is 1.16, suggesting a moderate level of asset utilization among the sampled companies. The average ROA reaches 10.89%, which indicates that, in general, the companies demonstrate relatively strong profitability performance. Furthermore, the mean Altman Z-Score, used as a measure of financial distress, is 55,374.01, accompanied by a high standard deviation of 121,112.70. This large variation suggests that the financial conditions of the companies differ considerably, with some firms showing stronger financial stability than others throughout the observation period.

### Selection of Panel Data Regression Models

Several model selection tests were carried out to identify the most appropriate panel data regression model for the analysis. These tests included the Chow test, Hausman test, and LM test. The purpose of these procedures was to compare the suitability of three alternative panel regression models, namely the CEM, FEM, and REM. The selected model was then used as the basis for examining the relationship between the independent variables and financial distress.

**Table 2. Summary of Panel Data Regression Model Selection**

Uji	Prob.	Keputusan	Model Terpilih
Uji Chow (CEM vs FEM)	0.1511	H0 diterima	Common Effect Model (CEM)

The Chow test was performed as the first stage in the panel data model selection process to determine whether the CEM or the FEM was more appropriate for the dataset. The test produced a p-value of 0.1511, which exceeded the significance level of 0.05. Therefore, the Common Effect Model was considered more suitable and selected for further analysis. Since the CEM was accepted at the initial stage of model evaluation, additional specification tests, such as the Hausman test and the LM test, were not conducted because further comparisons among panel data models were no longer required.

### Test for Classical Assumptions

#### Multicollinearity Test

A multicollinearity test was carried out using a correlation matrix among the independent variables included in the model. The results showed that all correlation coefficients were below the threshold value of 0.85, indicating that multicollinearity was not present in the dataset. Therefore, all independent variables could be retained in the regression analysis without causing significant distortion or reducing the validity of the estimated regression coefficients. This result suggests that each variable provides its own contribution in explaining financial distress and does not excessively overlap with the other explanatory variables.

**Table 3. Multicollinearity Test**

	X1(Likuiditas)	X2 (Leverage)	X3 (Aktivitas)	X4 (Profitabilitas)
X1(Likuiditas)	1.000000	-0.603299	-0.320054	-0.289208
X2 (Leverage)	-0.603299	1.000000	0.525081	0.679714
X3 (Aktivitas)	-0.320054	0.525081	1.000000	0.811229
X4 (Profitabilitas)	-0.289208	0.679714	0.811229	1.000000

The results of the multicollinearity test show that all correlation coefficients among the independent variables are below the commonly accepted threshold of 0.85. The highest correlation was found between Asset Efficiency (Activity), measured by TATO, and Profitability (ROA), with a coefficient value of 0.811, which is still within an acceptable range. These findings indicate that multicollinearity is not a serious issue in the regression model. Therefore, the explanatory variables are considered sufficiently independent from one another and can be included together in the analysis without creating substantial bias due to strong intercorrelations.

#### Heteroscedasticity Test

To examine the presence of heteroscedasticity, two diagnostic methods were utilized, namely the Glejser test and the White test. The Glejser test was conducted to identify whether heteroscedasticity was associated with any of the individual explanatory variables included in the model. In addition, the White test was applied to provide a broader evaluation of the variance structure and to determine whether the regression model fulfills the assumption of homoscedasticity. The use of these two procedures helps ensure that the regression estimates remain reliable and statistically valid.

**Table 4. Heteroscedasticity Test**

Heteroscedasticity Test : White
Null hypothesis: Homoskedasticity

<b>F-statistic</b>	0.649465	Prob. F(14,20)	0.7939
<b>Obs*R-squared</b>	10.93882	Prob. Chi-Square(14)	0.6908
<b>Scaled explained SS</b>	6.510900	Prob. Chi-Square(14)	0.9519
<b>F-statistic</b>	0.649465	Prob. F(14,20)	0.7939

The results of the Glejser test show that the CR has a p-value below 0.10, suggesting some indication of heteroscedasticity related to this variable. However, the White test produced p-values greater than 0.05, indicating that the regression model does not suffer from heteroscedasticity when assessed as a whole. Because the White test provides a more comprehensive evaluation of residual variance, its findings are considered the main basis for interpretation. Therefore, the CEM can be regarded as satisfying the homoscedasticity assumption, and the estimated regression coefficients are considered reliable without requiring additional corrections for heteroscedasticity.

### Model Estimation Results and Regression Equations

The CEM, which is also known as the Pooled OLS model, was employed to analyze the panel data by combining both cross-sectional and time-series observations into a single regression framework. This model assumes that all observational units share the same intercept and slope coefficients throughout the study period. In other words, the relationship between the independent variables and financial distress is considered to be constant across companies and over time, without accounting for individual or temporal differences among the observations.

**Table 5. Estimation Results of the Common Effect Model (CEM)**

Var.	Koefisien	Std. Error	t-Stat	Prob.
C	-71779.82	67170.83	-1.068616	0.2938
X1(Likuiditas)	47120.97	19420.09	2.426403	0.0215
X2 (Leverage)	-13330.67	23108.47	-0.576874	0.5683
X3 (Aktivitas)	-39103.45	47064.88	-0.830841	0.4126
X4 (Profitabilitas)	802906.7	427817.9	1.876749	0.0703
<b>R<sup>2</sup> = 0.336141 (33,61%)   Adj. R<sup>2</sup> = 0,2476      F = 3,797   Prob.(F) = 0,0129 ✓</b>				

The panel regression equation below is based on the results from the Common Effect Model (CEM).

$$Y = -71779,82 + 47120,97 (X1) - 13330,67 (X2) - 39103,45 (X3) + 802906,7 (X4)$$

The regression results show that CR has a positive association with the Altman Z-Score, with an estimated coefficient of 47,120.97. This result suggests that companies with higher liquidity tend to have better financial conditions and a lower probability of experiencing financial distress. Among all variables, ROA records the largest positive coefficient, amounting to 802,906.70, indicating that profitability is the strongest factor influencing the financial strength of manufacturing companies in the LQ45 Index. On the other hand, DER and TATO exhibit negative coefficient values. However, these effects are not statistically significant, implying that variations in debt levels and asset utilization did not have a meaningful impact on financial distress during the observation period.

### Hypothesis Testing and Discussion

#### H1 – The Effect of the Liquidity on Financial Distress: Accepted.

The regression analysis reveals a positive and statistically significant effect of CR on financial distress, as measured by the Altman Z-Score. This conclusion is supported by a t-

statistic of 2.426 and a probability value of 0.0215, both of which are lower than the 10% significance threshold. Therefore, the first hypothesis (H1) is accepted. The positive coefficient value of 47,120.97 indicates that an increase in liquidity is associated with a higher Altman Z-Score, implying a lower risk of financial distress. During the observation period, the sampled companies recorded an average Current Ratio of 2.15, reflecting generally strong liquidity conditions. Although liquidity weakened temporarily during the pandemic period, it gradually improved as economic conditions recovered.

This finding is consistent with the liquidity buffer theory, which argues that companies holding sufficient current assets relative to their short-term liabilities are more capable of absorbing unexpected financial shocks. In addition, signaling theory suggests that a higher Current Ratio sends a positive signal regarding the firm's short-term financial strength. Such conditions may increase investor confidence and lower perceptions of default risk.

The results are also in line with previous studies, which identified liquidity as an important determinant of financial distress across various industries. Overall, the evidence suggests that maintaining an adequate level of liquidity is essential for strengthening financial stability and minimizing the possibility of financial distress.

## **H2 – The Effect of the Leverage on Financial Distress: Rejected.**

The regression findings show that DER does not have a statistically significant influence on financial distress. This is evidenced by a t-statistic of -0.577 and a p-value of 0.5683, which is higher than the 10% significance level. Therefore, the second hypothesis (H2) is not supported. Although the sampled companies recorded an average DER of 1.19, differences in leverage levels did not lead to significant variations in the Altman Z-Score. This result indicates that capital structure by itself is not enough to explain the financial stability of manufacturing firms included in the LQ45 Index.

The finding is consistent with the trade-off theory, which argues that debt can serve as an effective source of financing as long as a company has adequate earnings and cash flow to fulfill its financial commitments. Since the firms included in the LQ45 Index are generally large and well-established companies, they tend to have better access to external financing, stronger corporate governance practices, and more efficient debt management systems. As a result, leverage alone is less likely to increase the risk of financial distress among these firms.

These results differ from the findings reported in [10], which found a strong negative relationship between leverage and financial performance in smaller companies. Such differences may be explained by the stronger financial fundamentals and broader access to capital markets enjoyed by LQ45 firms. Nevertheless, the findings are consistent with studies, which suggest that leverage becomes a significant determinant of financial distress mainly when companies have weak cash flows or insufficient liquidity. Given that the sampled companies show an average Current Ratio of 2.15, their relatively strong liquidity position may help offset the potential negative effects associated with higher debt levels. Overall, the evidence suggests that the impact of leverage on financial distress depends on several factors, including company size, liquidity strength, and the quality of financial management.

## **H3 – The Effect of the Assets Efficiency (TATO) on Financial Distress: Rejected.**

The regression analysis shows that Asset Efficiency (TATO) does not have a statistically significant effect on financial distress. This conclusion is supported by a t-statistic of -0.831 and a p-value of 0.4126, which is greater than the 10% significance level. Therefore,

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the third hypothesis (H3) is rejected. Although TATO measures how efficiently companies utilize their assets to generate sales revenue, the results indicate that asset turnover is not a major determinant of financial stability among manufacturing firms included in the LQ45 Index.

Based on the descriptive statistics, the average TATO value is 1.16, indicating a moderate level of variation in asset utilization across the sampled companies. During the COVID-19 pandemic, TATO generally decreased as sales declined while fixed asset levels remained relatively unchanged. Even though operational performance improved after the pandemic period, increases in asset turnover were not followed by comparable improvements in the Altman Z-Score. This suggests that operational efficiency alone cannot fully explain differences in the financial condition of the companies.

One possible explanation for this result is the asset-intensive nature of the manufacturing industry. Because manufacturing firms rely heavily on long-term fixed assets, TATO tends to be less sensitive to short-term operational changes, which reduces its ability to serve as an effective indicator of financial distress. As a result, liquidity and profitability appear to play a more important role in supporting the financial resilience of manufacturing companies within the LQ45 Index.

These findings are different from those reported in previous studies, which found a significant relationship between Asset Efficiency (TATO) and financial performance in the trade and construction sectors. Such differences may arise from variations in industry characteristics. Compared with trade or service-oriented industries, manufacturing companies depend more on fixed assets with long economic lives. Therefore, TATO may be a less responsive measure of financial distress in the manufacturing sector than in industries with more flexible asset structures.

#### **H4 – The Effect of Profitability on Financial Distress: Accepted.**

The regression results indicate that Profitability (ROA) has a positive and statistically significant effect on financial distress, as reflected by a t-statistic of 1.877 and a p-value of 0.0703, which is lower than the 10% significance level. Therefore, the fourth hypothesis (H4) is accepted. Among all explanatory variables, ROA shows the largest regression coefficient, amounting to 802,906.70, indicating that profitability is the most influential factor in determining the financial stability of manufacturing companies listed in the LQ45 Index.

The descriptive findings also support this result. Profitability declined considerably in 2020 as a consequence of the COVID-19 pandemic but gradually improved as economic conditions recovered. Companies with higher profitability generally recorded stronger Altman Z-Scores, while firms experiencing lower ROA tended to demonstrate weaker financial performance. This pattern reinforces the positive relationship between profitability and financial resilience observed in the regression analysis.

From a theoretical perspective, greater profitability enables firms to generate more internal funds and cash flows, thereby reducing their reliance on external financing and improving financial stability. Furthermore, agency theory suggests that sustained profitability reflects the effective utilization of company assets by management, which can increase investor confidence and decrease the likelihood of financial distress.

These findings are consistent with previous studies, which also identified profitability as one of the main determinants of financial distress. Considering that this study is based on a relatively small sample of 35 panel observations, the use of a 10% significance level is

considered appropriate for exploratory analysis and remains consistent with common practices in financial and accounting research.

#### **H5 – The Simultaneous Effect of the Four Ratios: Accepted.**

The F-test results produce an F-statistic of 3.797 with a probability value of 0.0129, which is lower than the 5% significance level. Therefore, the fifth hypothesis (H5) is accepted. This finding indicates that CR, DER, TATO, and ROA jointly have a statistically significant effect on financial distress among manufacturing companies listed in the LQ45 Index. The regression model explains approximately 33.61% of the variation in the Altman Z-Score, with an Adjusted R<sup>2</sup> value of 24.76%. The remaining unexplained variation may be influenced by other determinants not included in this study, such as macroeconomic conditions, corporate governance practices, and market-related factors. Although the model demonstrates a moderate explanatory power, it remains appropriate for exploratory panel data research involving a relatively small sample size. The results suggest that liquidity, leverage, operational efficiency, and profitability represent different dimensions of a company's financial performance. When these variables are examined simultaneously, they provide a broader and more comprehensive explanation of financial distress, supporting the multidimensional nature of the Altman Z-Score model. Furthermore, these findings are consistent with previous studies, which argue that incorporating multiple financial ratios can improve the predictive ability of financial distress models in Indonesian companies. Collectively, the evidence highlights the importance of evaluating several aspects of financial performance rather than relying on a single ratio when assessing the risk of financial distress.

## **CONCLUSION**

This research investigates the relationship between Liquidity, Leverage, Activity, and Profitability on financial distress, which is measured using the Altman Z-Score model. The analysis focuses on seven manufacturing companies included in the LQ45 Index of the IDX) during the 2020–2024 period. Based on the empirical findings, several conclusions can be drawn. First, CR shows a positive and statistically significant effect on financial distress ( $t = 2.426$ ;  $\text{sig.} = 0.022 < 0.10$ ). Higher liquidity levels are associated with stronger financial conditions and a lower probability of experiencing financial distress. The average Current Ratio of 2.15 indicates that the sampled companies generally maintained adequate liquidity throughout the observation period. Second, DER does not demonstrate a statistically significant effect on financial distress ( $\text{sig.} = 0.568 > 0.10$ ). As large and established firms, companies included in the LQ45 Index generally possess broader access to external financing and stronger governance mechanisms, allowing them to manage debt levels without substantially increasing the risk of financial distress. Third, TATO also does not show a significant relationship with financial distress ( $\text{sig.} = 0.413 > 0.10$ ). The capital-intensive nature of manufacturing firms, together with the operational disruptions caused by the COVID-19 pandemic, may reduce the effectiveness of TATO as an indicator of financial distress within the manufacturing sector. Fourth, ROA) presents a positive and statistically significant influence at the 10% significance level, with the largest regression coefficient among all variables (802,906.70;  $\text{sig.} = 0.070$ ). This result suggests that profitability is the most dominant factor in explaining the financial stability of manufacturing companies listed in the LQ45 Index. Finally, the F-test results indicate that Liquidity, Leverage, Asset Efficiency, and

Profitability jointly have a statistically significant effect on financial distress ( $F = 3.797$ ;  $\text{sig.} = 0.013$ ;  $R^2 = 33.61\%$ ). Taken together, the findings suggest that liquidity and profitability are the most influential determinants of financial performance and financial resilience among manufacturing companies included in Indonesia's LQ45 Index.

Based on these findings, several recommendations are proposed. For manufacturing companies, it is essential to maintain adequate liquidity levels and continuously improve profitability through operational efficiency and cost optimization, as these factors significantly reduce financial distress risk. For investors, the findings underscore the importance of prioritizing liquidity and profitability ratios when evaluating potential investments in manufacturing firms, as these metrics provide reliable indicators of financial health. For creditors and financial institutions, the results suggest that assessing a company's liquidity and profitability positions should be a primary consideration in credit risk evaluation. For policymakers, particularly the Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX), the findings highlight the importance of requiring regular financial health disclosures and developing early warning systems based on key financial ratios to detect potential financial distress among listed manufacturing companies. For future researchers, it is recommended to expand the sample size and observation period, incorporate additional financial and non-financial variables such as corporate governance and macroeconomic conditions, and employ alternative financial distress prediction models to enhance the robustness and generalizability of findings.

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