



The Shield Against Distress: Risk Management as a Mediator of Financial Ratios in the Property Industry

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Abstract :

Financial distress has become a critical issue in the property industry due to the sector's high dependence on external financing, long project cycles, and vulnerability to economic fluctuations. This study aims to analyze the influence of financial and non-financial ratios on financial distress and to examine the mediating role of risk management in the relationship between these variables. A quantitative approach was employed using panel data regression analysis on property companies, with profitability, liquidity, leverage, sales growth, and company size as independent variables, risk management as a mediating variable, and financial distress as the dependent variable. The results indicate that profitability and liquidity have a significant direct influence on financial distress, suggesting that companies with stronger profitability and adequate liquidity are less likely to experience financial difficulties. Meanwhile, leverage does not directly affect financial distress but exerts an indirect influence through the mediating role of risk management, indicating that effective risk management practices can mitigate the negative impact of high leverage. The findings highlight that financial ratios combined with risk management provide a more comprehensive assessment of corporate financial health. This study contributes to the literature by emphasizing the strategic role of risk management in strengthening financial resilience and reducing the likelihood of financial distress in the property industry, particularly in environments characterized by financial uncertainty and market volatility.

INTRODUCTION

The property industry plays a strategic role in supporting economic growth, as it contributes to infrastructure development, job creation, and the expansion of Gross Domestic Product (GDP) (Aritenang & Chandramidi, 2023; Liu et al., 2020; Wenjuan & Zhao, 2023). As one of the most dynamic sectors, the property industry experiences continuous development alongside urbanization and population growth (Kasdi et al., 2022; Long et al., 2022). However, despite its substantial potential, this sector is highly sensitive to economic fluctuations, interest rate changes, regulatory policies, and market

volatility (Custódio et al., 2022; Diaz, 2022). These conditions make property companies particularly vulnerable to financial instability, which can ultimately lead to financial distress if not managed effectively (Octavianus & Taufan, 2024). The growth of the property industry during the period 2010–2023, as illustrated in Figure 1, reflects both the expansion potential of the sector and the financial risks embedded within its development dynamics.

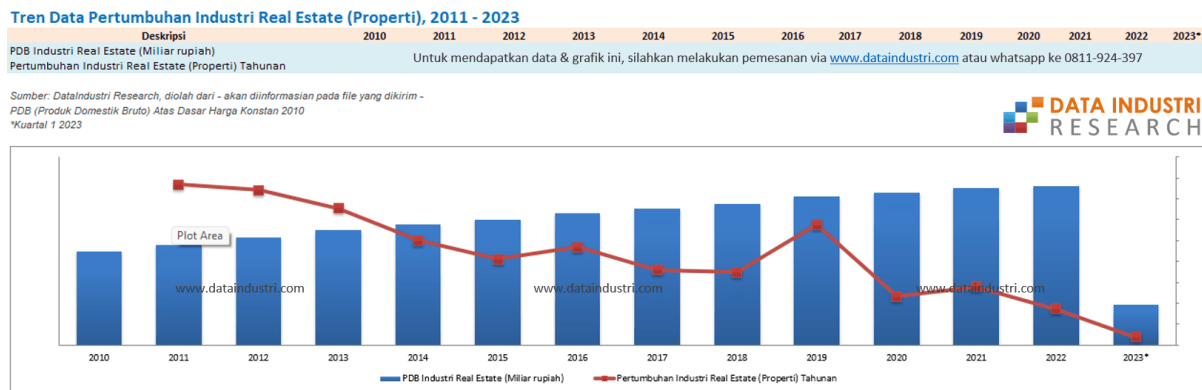


Figure 1. Growth of the Property Industry for the Period 2010-2023

Source: (Industry Data Research, 2024)

Financial distress has become a major concern for companies operating in capital-intensive industries such as property. Financial distress refers to a condition in which a company experiences difficulty in fulfilling its financial obligations, often indicated by declining cash flows, excessive debt levels, and reduced operational capacity (Nuswantara et al., 2023; Rambe & Datuk, 2021; Wilson et al., 2023). In many cases, financial distress arises from a combination of internal financial weaknesses and unfavorable external conditions, including macroeconomic instability and changes in financial policy (Abbas & Frihatni, 2023; Luu Thu, 2023). Because property development projects require substantial investment and long project cycles, firms in this sector tend to rely heavily on external financing, increasing their exposure to financial risk (Agorastos et al., 2021; Sukendri, 2024). Consequently, understanding the determinants of financial distress in the property industry is essential for maintaining corporate sustainability and protecting stakeholder interests.

Previous studies have emphasized the role of financial ratios in predicting the likelihood of financial distress. Financial indicators such as profitability, liquidity, leverage, and sales growth are widely used to assess a firm's financial condition and its ability to sustain operations (Gyulasaryan et al., 2025; Hasidi et al., 2024; Lee, 2023). One of the most influential models in financial distress prediction is the Altman Z-Score model, which integrates several financial ratios to estimate the probability of bankruptcy (Fikri & Yolanda, 2023). Other predictive approaches, such as the Ohlson O-Score and the Springate model, have also been developed to evaluate corporate financial vulnerability across different industries (Abbas & Frihatni, 2023; Gyulasaryan et al., 2025; Li et al., 2021). While these models provide useful indicators of financial risk, many studies focus primarily on financial ratios without sufficiently considering organizational mechanisms that may mitigate financial distress.

One important organizational mechanism that may influence financial stability is risk management. Risk management refers to a systematic process of identifying, assessing, and controlling potential risks that may affect organizational performance and

sustainability (Billah et al., 2024; Sukendri, 2024). Effective risk management allows companies to anticipate financial threats, manage debt structures, and maintain adequate liquidity levels, thereby reducing the probability of financial distress (Walela et al., 2022). In this context, risk management can function as a mediating mechanism that shapes how financial performance indicators influence the likelihood of financial distress. Companies that implement effective risk management practices are more capable of responding to market uncertainty and financial shocks, thereby strengthening their financial resilience (Vijayalakshmi & Arpanaa, 2021).

Despite the growing body of literature on financial distress prediction, limited studies have explored the mediating role of risk management in the relationship between financial ratios and financial distress, particularly within the property industry. Most previous research examines the direct effect of financial ratios on financial distress, without considering how managerial risk-control mechanisms may alter or mitigate this relationship (Abdullah et al., 2023; Dewi et al., 2023; Hajaroh et al., 2024). Given the high financial exposure and leverage characteristics of the property sector, incorporating risk management into financial distress analysis can provide a more comprehensive understanding of corporate financial vulnerability.

Based on this research gap, this study aims to analyze the influence of financial ratios—including profitability, liquidity, leverage, sales growth, and company size—on financial distress in property companies, while also examining the mediating role of risk management in this relationship. By integrating financial indicators and risk management practices, this research seeks to develop a more holistic model for predicting financial distress within the property industry.

This study contributes to the literature in several ways. First, it extends previous financial distress research by integrating risk management as a mediating variable between financial ratios and financial distress. Second, it provides empirical evidence from the property industry, which is characterized by high leverage and financial risk exposure. Third, the findings are expected to offer practical insights for corporate managers, investors, and policymakers in improving financial risk management strategies to prevent financial distress and strengthen corporate sustainability.

RESEARCH METHOD

This study employs a quantitative research approach grounded in the positivist paradigm, emphasizing objective measurement and statistical analysis to examine relationships among variables. Quantitative research focuses on collecting numerical data and analyzing it systematically to test hypotheses and explain causal relationships within a defined population or sample (Mulisa, 2022). The research design applied in this study is causal research, aiming to identify and analyze the influence of several independent variables on the dependent variable. In this context, profitability (X1), liquidity (X2), leverage (X3), sales growth (X4), and company size (X5) are treated as independent variables. At the same time, risk management (Y) serves as a mediating variable that may influence the relationship between these financial indicators and financial distress (Z), the dependent variable.

The primary objective of this research is to examine how financial performance indicators influence the likelihood of financial distress in property companies and to determine whether risk management plays a mediating role in this relationship. By incorporating risk management as an intermediary variable, the study seeks to provide a

more comprehensive understanding of how financial conditions translate into financial vulnerability. The causal framework enables the researcher to observe both the direct effects of financial ratios on financial distress and the indirect effects arising from risk management practices. This approach is expected to offer deeper insights into the mechanisms underlying the emergence of financial stability or instability in the property industry.

To provide an initial understanding of the research data, descriptive statistical analysis is conducted. This analysis includes several statistical indicators such as the mean, minimum value, maximum value, and standard deviation, which are used to describe the distribution and variability of the data collected from the research sample (Taherdoost, 2022). Descriptive statistics help illustrate the overall financial condition of the companies being studied and provide a preliminary overview before conducting further inferential analysis. Through this analysis, the researcher can identify patterns, trends, and potential irregularities in the data that may influence the subsequent regression analysis.

Hypothesis testing in this study is conducted using panel data regression analysis. Panel data combines cross-sectional data from multiple companies with time-series data over a period, enabling more comprehensive and reliable statistical analysis. This method enables researchers to capture both individual company characteristics and temporal variations within the dataset. The use of panel data regression also improves the efficiency of the estimation process and helps control for potential biases arising from unobserved heterogeneity across companies.

In panel data analysis, selecting the most appropriate regression model is essential to ensure that results accurately reflect the relationship between variables. Several alternative models can be used, including the Common Effect Model (CEM), the Fixed Effect Model (FEM), and the Random Effect Model (REM). The Common Effect Model assumes that all observations share the same intercept and that there are no specific individual effects across entities. In contrast, the Fixed Effect Model assumes that each entity has unique characteristics that remain constant over time. In contrast, the Random Effect Model assumes that individual effects are random and uncorrelated with the independent variables.

To determine the most suitable model for the data, several statistical tests are conducted. The Chow test compares the Common Effect Model and the Fixed Effect Model to determine whether individual effects significantly affect the regression results. The Hausman test is then applied to evaluate the suitability between the Fixed Effect Model and the Random Effect Model by examining whether individual effects are correlated with the independent variables. In addition, the Lagrange Multiplier (LM) test is used to compare the Random Effect Model with the Common Effect Model to determine whether random effects are present in the dataset. The results of these tests help determine the most appropriate regression model for further hypothesis testing.

After selecting the most appropriate panel data regression model, several statistical tests are conducted to evaluate the relationship between variables. The partial significance test, commonly known as the t-test, is used to examine the individual effect of each independent variable on the dependent variable at a 95 percent confidence level and a 5 percent significance level (Duckett, 2021). This test helps determine whether each financial ratio significantly influences financial distress or risk management. In addition to the t-test, the simultaneous significance test, or F-test, is conducted to evaluate the

combined effect of all independent variables on the dependent variable. A significant F-test result indicates that the regression model as a whole provides a meaningful explanation of variations in the dependent variable.

To examine the mediating role of risk management, this study employs the Sobel test, a widely used test for assessing whether an indirect effect exists between independent and dependent variables via a mediating variable. The Sobel test produces a statistical z-value that indicates whether the mediation effect is statistically significant. If the resulting probability value is below the 0.05 significance threshold, the mediation effect is considered significant, indicating that risk management plays an intermediary role in the relationship between financial ratios and financial distress.

Finally, the coefficient of determination (R^2) is used to assess the regression model's explanatory power. The R^2 value reflects the proportion of variation in the dependent variable that is explained by the independent variables in the model (Taherdoost, 2022). A higher R^2 value indicates that the regression model has stronger explanatory capability in describing the relationship between financial indicators, risk management practices, and financial distress. Through these analytical procedures, the study aims to provide robust empirical evidence regarding the role of financial performance and risk management in influencing financial distress in the property industry.

RESULTS AND DISCUSSION

Results

Statistical Analysis

Based on the data processing results from 34 property industry companies, the following are the results of the descriptive statistical tests in this study,

Table 1. Descriptive Statistics of Research Data

	X1	X2	X3	X4	X5	Y	Z
Mean	0.016	3.963	0.694	7.429	5,55E+12	0.550	2.786
Maximum	0.428	65.593	27.038	1,235.837	6,68E+13	0.962	49.362
Minimum	-0.186	0.002	-21.058	-0.998	935,197.0	0.164	-0.818
Std. Dev.	0.065	7.528	3.092	94.776	1,16E+13	0.135	5.624
Observations	170	170	170	170	170	170	170

Source: Data Processed Using Eviews Version 12, 2024

As previously described, this study uses a path analysis method. Therefore, this research has three structural multiple regression models: Model I (X1, X2, X3, X4, and X5 as independent variables and Z as the dependent variable), Model II (X1, X2, X3, X4, X5, and Y as independent variables and Z as the dependent variable), and Model III (X1, X2, X3, X4, and X5 as independent variables and Y as the dependent variable). The following are the results of the model selection for the panel data regression method,

Chow Test

According to the results of the Chow Test, the outcomes for each model are as follows: In Model I, the probability (Prob.) of the Cross-section Chi-square value is 0.0000, which is less than or equal to 0.05. This indicates that we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1), indicating that the Fixed Effect Model is the most appropriate. Similarly, in Model II, the probability (Prob.) of the Cross-section Chi-square value is also 0.0000, leading to the same conclusion: we reject H_0 and accept H_1 ,

confirming that the Fixed Effect Model is the preferred choice. In Model III, the probability (Prob.) of the Cross-section Chi-square value remains 0.0000, reinforcing the rejection of H0 and acceptance of H1, further indicating that the Fixed Effect Model is the correct model. Based on these results, we proceed to the next step: conducting the Hausman test to determine the most suitable model by comparing the Fixed Effect Model with the Random Effect Model. The following are the results from Model III.

Table 2. Results of the Chow Test for Model III

Redundant Fixed Effects Tests			
Equation: FEM3			
Test for cross-sectional fixed effects			
Test of Effects	Statistic	d.f.	Prob.
Cross-sectional F	41.778757	(33,131)	0.0000
Cross-sectional Chi-square test	415.559602	33	0.0000

Source: Data Processed Using Eviews Version 12, 2024

Hausman Test

The Hausman Test yields the following results for each model, compared with the Chow Test: Model I has a probability (Prob.) cross-section random model value of 0.4704 (> 0.05), indicating we accept H0 or reject H1 and that the chosen model is the Random Effect Model. Model II has a probability (Prob.) cross-section random model value of 0.2255 (> 0.05), leading to the same conclusion: we accept H0 or reject H1, indicating that the chosen model is the Random Effect Model. Model III has a probability (Prob.) cross-section random model value of 0.3628 (> 0.05), meaning we accept H0 or reject H1, confirming that the chosen model is the Random Effect Model. Thus, testing for the best model continues using the Lagrange Multiplier test, which compares or selects between the Common Effect Model and the Random Effect Model. The following are the results from the Model III.

Table 3. Results of the Hausman Test for Model III

Correlated Random Effects - Hausman Test			
Equation: REM3			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.455761	5	0.3628

Source: Data Processed Using Eviews Version 12, 2024

Lagrange Multiplier (LM) Test

According to the results of the Lagrange Multiplier Test, when compared with the Hausman Test, the findings for each model are as follows: In Model I, the probability (Prob.) of the Breusch-Pagan value is 0.0000, which is less than or equal to 0.05. This means that we reject the null hypothesis (H0) and accept the alternative hypothesis (H1), indicating that the Random Effect Model is the most appropriate model for this case. Similarly, in Model II, the Breusch-Pagan value has a probability (Prob.) of 0.0000, which is also less than or equal to 0.05, leading to the same conclusion: we reject H0 and accept H1, confirming the suitability of the Random Effect Model. In Model III, the Breusch-Pagan test again has a probability (Prob.) of 0.0000, which is less than or equal to 0.05, indicating that we reject H0 and accept H1, further validating that the Random Effect Model is the correct model to use. The following are the results from Model III.

Table 4. Results of the Lagrange Multiplier Test for Model III

Lagrange Multiplier Tests for Random Effects			
Null Hypothesis: No effects present			
Alternative Hypothesis: Two-sided (Breusch-Pagan) and one-sided (for all other cases) alternatives			
	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	242.6507 (0.0000)	1.673796 (0.1958)	244.3245 (0.0000)

Source: Data Processed Using Eviews Version 12, 2024

Of the three test results, two tests indicate a Random Effect Model, namely the Hausman Test and the Lagrange Multiplier Test. This leads us to conclude that the Random Effect Model, regardless of Model I, Model II, or Model III, is the optimal method approach for this research.

Coefficient of Determination Test (Adjusted R-Square)

Table 5. Coefficient of Determination Test (Adjusted R-Square)

	R-squared	Adjusted R-squared
Model I Independen: X1, X2, X3, X4, X5 Dependen: Z	0.943240	0.941509
Model II Independen: X1, X2, X3, X4, X5, Y Dependen: Z	0.944406	0.942360
Model III Independen: X1, X2, X3, X4, X5 Dependen: Y	0.242441	0.219345

Source: Data Processed Using Eviews Version 12, 2024

The results for R-squared and Adjusted R-squared for the three models show that Models I and II have a very good ability to explain the variability in financial distress (Z), with R-squared values above 94%, with Model II slightly higher due to the addition of the risk management variable (Y). Model III, on the other hand, has a much lower R-squared value (24.24%), indicating that the independent variables are less effective at explaining changes in risk management (Y) than in financial distress. Financial and non-financial variables have a stronger influence on financial distress than on risk management.

Direct Effect Test (t-test)

Table 6. Partial Test (t-test)

	Hypothesis	Coefficient	t-Statistic	Prob.	Description
Model I	H1: X1 → Z	10.99314	6.722766	0.0000*	Significant
	H2: X2 → Z	0.710274	49.44327	0.0000*	Significant
	H3: X3 → Z	-0.041485	-1.236256	0.2181	Not Significant
	H4: X4 → Z	-6.68E-05	-0.058909	0.9531	Not Significant
	H5: X5 → Z	-7.31E-15	-0.277645	0.7816	Not Significant
Model III	H6: X1 → Y	0.126241	1.803223	0.0732	Not Significant
	H7: X2 → Y	0.002038	3.310580	0.0011*	Significant
	H8: X3 → Y	-0.006715	-4.666313	0.0000*	Significant
	H9: X4 → Y	-0.000121	-2.064495	0.0405*	Significant
	H10: X5 → Y	-1.35E-15	-0.814004	0.4168	Not Significant

Source: Data Processed Using Eviews Version 12, 2024

Based on the analysis of both models, it can be concluded that Variables X1 (profitability) and X2 (liquidity) both have a significant impact on risk management (Z). However, only X2 (liquidity) shows a significant influence on financial distress (Y). On the other hand, X3 (leverage) does not significantly affect risk management but does significantly affect financial distress. X4 (sales growth) significantly influences financial distress but does not affect risk management. Lastly, X5 (company size) does not have a significant effect on either risk management or financial distress.

These results indicate that some variables have different effects on risk management and financial distress, with variable X2 consistently significant in both models.

Hypothesis Testing of Indirect Effects (Sobel Test)

Table 7. Sobel Test Results

	Hypothesis	Sobel Test	Prob.	Description
Sobel Test	H11: X1 → Y → Z	-1.632	0.103	Does Not Mediate
	H12: X2 → Y → Z	-2.506	0.012*	Mediates
	H13: X3 → Y → Z	2.964	0.003*	Mediates
	H14: X4 → Y → Z	1.818	0.069	Does Not Mediate
	H15: X5 → Y → Z	0.796	0.426	Does Not Mediate

* Significantly mediates at $\alpha=5\%$

Source: Processed Data Using Sobel Test Calculator <http://quantpsy.org/sobel/sobel.htm>, 2024

The Sobel Test shows that risk management (Y) acts as a go-between for liquidity (X2), leverage (X3), and financial distress (Z). The probability values for these go-betweens are 0.012 and 0.003, which are both significant below 0.05. Meanwhile, for the variables profitability (X1), sales growth (X4), and company size (X5), risk management does not mediate their influence on financial distress, as their probability values are each greater than 0.05.

Simultaneous Test (F-Test)

Table 8. Simultaneous Test (F-Test)

	F-statistic	Prob(F-statistic)
Model II	461.4944	0.000000
Independen: X1, X2, X3, X4, X5, Y		
Dependen: Z		

Source: Data Processed Using Eviews Version 12, 2024

Based on the table above, the probability value (Prob (F-statistic)) for Model II is 0.000000 (<0.05), which means that at a 5% significance level, profitability (return on assets (ROA)), liquidity (current ratio (CR)), leverage (debt to equity ratio (DER)), sales growth, company size, and risk management collectively have a significant effect on financial distress. Therefore, hypothesis H16 in this study is accepted or supported.

Discussion

The findings of this study provide important insights into the relationship between financial ratios, risk management practices, and financial distress in the property sector. The results indicate that financial indicators remain crucial tools for assessing the financial

stability of companies operating in capital-intensive industries (Custódio et al., 2022; Diaz, 2022). In the property sector, where projects require substantial investment and long development cycles, financial stability is strongly influenced by a company's ability to manage its financial resources effectively. The empirical results demonstrate that financial ratios not only serve as indicators of financial performance but also as early warning signals that help identify potential financial distress. By integrating risk management into the analysis, this research offers a more comprehensive understanding of how companies can mitigate financial vulnerability and maintain long-term financial sustainability.

The analysis reveals that profitability and liquidity have a significant direct effect on financial distress. Companies with higher profitability tend to be more financially resilient, as they generate sufficient earnings to support operations and meet financial obligations (Octavianus & Taufan, 2024). Similarly, adequate liquidity allows firms to maintain stable cash flows and meet short-term liabilities, thereby reducing the risk of financial distress. In the property industry, where operational costs and project financing are relatively high, strong profitability and liquidity are critical to ensuring business continuity (Fikri & Yolanda, 2023). These findings support previous studies suggesting that firms with stable financial performance are less likely to experience financial distress because they possess greater capacity to absorb financial shocks.

Another important finding of this study concerns the mediating role of risk management in the relationship between leverage and financial distress. The results indicate that leverage does not directly influence financial distress but instead affects financial stability through the implementation of risk management practices. This suggests that companies with high debt levels can still maintain financial stability if they implement effective risk management strategies (Billah et al., 2024; Sukendri, 2024). Through mechanisms such as debt restructuring, liquidity planning, and financial risk monitoring, companies can mitigate the potential negative impacts of excessive leverage. Therefore, risk management plays a crucial role in transforming financial risk into manageable exposure, enabling firms to operate more securely despite having relatively high levels of debt.

The coefficient of determination analysis further demonstrates that financial and non-financial ratios, combined with risk management, explain a substantial proportion of the variance in financial distress among property companies. This indicates that financial performance indicators remain strong predictors of corporate financial health. However, the explanatory power of the risk management variable appears relatively lower than that of financial ratios, suggesting that financial performance conditions more directly influence financial distress. While risk management contributes to strengthening financial resilience, its effectiveness largely depends on the company's financial structure and operational capacity (Vijayalakshmi & Arpanaa, 2021). Consequently, integrating financial performance indicators with risk management practices provides a more comprehensive framework for understanding financial vulnerability in the property sector.

The results of the partial significance tests also reveal varying levels of influence among the independent variables examined in this study. Profitability and liquidity demonstrate significant direct effects on financial distress, indicating that these variables are primary indicators of financial health in property companies. In contrast, leverage exhibits an indirect influence that becomes significant only when mediated by risk management. This finding highlights the complexity of financial dynamics in the property sector, where certain indicators may not immediately signal financial distress but can

become problematic when risk control mechanisms are weak (Walela et al., 2022). Therefore, companies must not only focus on improving financial performance but also ensure that appropriate risk management systems are in place to manage financial exposure effectively.

The findings emphasize the strategic importance of risk management in maintaining financial stability within the property industry. As property companies often operate in high-leverage environments, the presence of structured and proactive risk management practices can serve as a buffer against financial instability. From a practical perspective, property firms are encouraged to strengthen their risk management frameworks while continuously monitoring key financial ratios to anticipate potential financial distress. For future research, it is recommended to expand the analytical model by incorporating qualitative dimensions, such as managerial decision-making, corporate governance practices, and organizational risk culture, to explain variations in financial distress further and improve the accuracy of predictive models in the property industry.

CONCLUSION

The results of the panel data analysis conducted using EViews 12 indicate that the independent variables—profitability, liquidity, leverage, sales growth, and company size—collectively have a significant influence on financial distress, as reflected by the high Adjusted R-squared values in Models I and II. However, when risk management is incorporated into the model (Model III), the Adjusted R-squared value becomes lower, suggesting that financial distress is more directly explained by financial ratios than by risk management alone. Partially, the analysis shows that profitability and liquidity have a significant positive effect on financial distress, whereas leverage, sales growth, and company size do not demonstrate a significant direct influence. The Sobel test further reveals that risk management functions as a partial mediator in the relationship between liquidity and financial distress and as a full mediator in the relationship between leverage and financial distress. Meanwhile, risk management does not mediate the influence of profitability, sales growth, or company size on financial distress.

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