



**ANALYSIS OF THE Z-SCORE IN PREDICTING FINANCIAL DISTRESS AND ITS
IMPACT ON THE VALUE OF THE FIRM IN THE FINANCIAL SECTOR LISTED
ON THE INDONESIAN STOCK EXCHANGE FOR THE PERIOD 2022-2024**

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Abstract

This study aims to analyze the financial health and the potential for financial distress using the Altman Z-Score method, as well as its effect on firm value as measured by Tobin's Q. in financial sector companies listed on the Indonesia Stock Exchange during the 2022-2024 period, using secondary data obtained from company financial statements. The results indicate that most companies are in less stable financial conditions, reflected by the dominance of firms categorized as experiencing financial distress, while firm value varies across companies, indicating that market assessments are not uniform. Furthermore, the Altman Z-Score is found to have a significant effect on firm value, suggesting that financial health plays an important role in determining firm value, although market valuation does not always fully reflect the company's fundamental condition.

Keywords: Altman Z-Score, Financial Distress, Firm Value, Tobin's Q



INTRODUCTION

The financial sector occupies a highly strategic position in the Indonesian economy as it serves as the primary driver of financial intermediation activities. Through banks, financing companies, insurance firms, and various other financial service institutions, this sector provides access to financing for households and businesses alike, while maintaining the stability of the national financial system. A report by the Financial Services Authority (OJK, 2024) indicates that the financial services industry remains a key pillar of the national economy, as evidenced by the growth trend in its assets over the past five years. This finding aligns with data from the Indonesia Stock Exchange (BEI, 2024), which notes that financial sector companies dominate market capitalization and stock trading activity. This dominance indicates that the financial sector's performance has a significant impact on the creation of economic value in the capital market. Given such a substantial role, the financial health of financial companies is an aspect that cannot be overlooked, particularly in maintaining macroeconomic stability and the sustainability of intermediary functions.

The sheer scale of Indonesia's financial sector is reflected in the high market capitalization recorded by the Indonesia Stock Exchange. According to data (IDX, 2024), the financial sector's market capitalization stands at approximately Rp12,264 trillion, making it one of the largest contributors to the exchange. This scale underscores that the financial condition of financial firms has a significant impact on capital market stability, making financial resilience a critical factor in maintaining the stability of the national financial system.

Although Indonesia's financial sector continues to record relatively strong growth in assets and market capitalization, the dynamics of the domestic capital market still reflect the characteristics of an emerging market. The increase in the number of retail investors in recent years has not been fully accompanied by an adequate understanding of market instruments and risks. Results (SNLIK, 2025) released by the OJK show that the national financial literacy rate has only reached 66.46%, indicating that investors' ability to interpret fundamental information remains limited. This situation makes the market more sensitive to short-term sentiment than to financial analysis based on corporate reports. This situation raises questions about the extent to which fundamental signals, such as the Altman Z-Score, are actually reflected by the market in determining a company's value.

Conceptually, this phenomenon is significant because irrational investor behavior can disrupt the stock pricing mechanism, which should reflect a



company's fundamental conditions. Research (Sari & Sembiring, 2023) indicates that retail investors' decisions in Indonesia are often influenced by market sentiment and social media recommendations, leading to herd behavior. In such situations, stock prices may move out of alignment with a company's financial health, including risk signals reflected by the Altman Z-Score. This underscores the need to reassess whether this indicator remains capable of explaining a company's value in Indonesia's market, which is not yet fully efficient.

In addition to investor behavior, the dynamics of the Indonesian capital market are also influenced by the government's fiscal policies aimed at maintaining financial system stability. The Ministry of Finance's plan to inject approximately Rp200 trillion into several state-owned banks by 2025 (OJK, 2025) is one of the measures to strengthen banking liquidity amid global uncertainty. Although this policy provides short-term support, its effectiveness in enhancing corporate value is not always clear, particularly because domestic investors' responses are often not based on fundamental analysis. In a market that is not yet fully efficient, such liquidity stimulus is not automatically reflected in stock prices; therefore, further testing is needed to determine how this policy contributes to corporate value creation.

Advances in digital technology over the past few years have transformed how investors obtain and respond to information in the capital markets. The proliferation of mobile-based investment apps and the flood of financial content on social media have driven faster investment decision-making, which is often influenced by popularity rather than in-depth fundamental analysis. Data from (BI, 2024) and (Fintech, 2023) indicate a significant increase in digital financial activity and growth in the number of novice investors, which heightens the likelihood that fundamental information-including financial health indicators such as the Altman Z-Score is not being reflected proportionally by the market. This situation has the potential to cause a company's value to deviate from its actual financial condition, particularly in the financial sector, which is highly sensitive to shifts in public perception.

Digital transformation has also accelerated the spread of information in the capital markets both factual and speculative-making market reactions increasingly sensitive to short-term sentiment shifts. Research (Safitri et al., 2025) indicates that a significant portion retail investors now rely on social media as their primary source of investment information, making stock prices more susceptible to non-professional opinions. On the other hand, the widespread use of digital financial services, including electronic payments, has also accelerated



shifts in perceptions regarding the stability of financial institutions, even though the companies' fundamental conditions remain relatively unchanged. Under such conditions, the potential for a mismatch between fundamental value and market value grows, making it important to reassess the relevance of the Altman Z-Score in explaining the formation of a company's value amid a fast-paced digital environment.

Changes in investor behavior in the digital age, large-scale fiscal policies, and the rapid flow of information in the capital markets mean that a company's fundamental signals are not always consistently reflected in stock prices. This situation is particularly evident in emerging markets like Indonesia, where market efficiency remains limited and the market is dominated by retail investors who are sensitive to short-term sentiment. As a result, fundamental information—including financial health indicators such as the Altman Z-Score is often not fully and proportionally reflected in a firm's value. This situation raises the question of whether measures of a firm's financial health truly possess predictive power regarding the formation of the firm's value, particularly in the financial sector, which carries systemic risks and is highly sensitive to macroeconomic conditions.

Furthermore, a review of prior research reveals divergent findings regarding the relationship between financial condition and the value of the firm. Some studies find that the Altman Z-Score influences firm value, while others show no significant relationship. Differences in sector, market conditions, study periods, and investor characteristics are believed to account for this inconsistency. In the financial sector, these differences are also influenced by its high-risk characteristics, such as liquidity risk, credit risk, market risk, and strong sensitivity to changes in macroeconomic policies and regulations. These conditions indicate that the relationship between financial distress and firm value still requires further testing, particularly in the context of the Indonesian capital market and the financial sector, which have complex risk characteristics.

The differences in capital market characteristics between developed and developing countries further underscore the need to re-examine the relevance of fundamental indicators such as the Altman Z-Score in Indonesia. Several studies indicate that developed markets exhibit higher levels of efficiency and responsiveness to information, meaning that fundamental signals tend to be reflected more quickly in stock prices. (Morita & Nakano, 2020) in the *Journal of Asian Finance, Economics and Business* found that the Japanese market falls into the category of relatively efficient markets, where stock prices respond to fundamental information quickly and consistently. In their study, they found that more mature markets like Japan tend to have more responsive price-formation



mechanisms compared to emerging markets. Meanwhile, several other markets in Asia, including Indonesia, still exhibit delays in processing financial information, meaning that distress signals reflected by indicators such as the Altman Z-Score are not always immediately reflected in firm value. These differences in market characteristics underscore the importance of re-examining the relationship between financial distress and firm value in the Indonesian context, which is in a transitional phase toward a more efficient market.

Based on the above discussion, it can be understood that financial distress, as measured by the Altman Z-Score, has the potential to serve as a predictor of firm value, as demonstrated by various studies conducted in countries with developed capital markets such as the United States, Japan, and Singapore. In markets classified as efficient, information regarding a company's fundamental conditions including the level of financial distress risk is typically quickly absorbed into stock prices and thus reflected in firm value. However, these characteristics do not fully apply to Indonesia, which is still classified as an emerging market. Limited market efficiency, relatively low financial literacy, and an uneven public ownership structure mean that fundamental information—including the Z-Score—is not always fully reflected in the market, so the relationship between financial distress and a firm's value is not always optimally reflected.

Theoretically, financial distress as reflected by the Altman Z-Score affects a firm's value through changes in investors' perceptions of the company's risk and prospects. Companies with low Z-Scores are perceived as having a higher risk of bankruptcy, thereby reducing investor confidence and leading to a decline in stock prices. Conversely, companies with a high Z-Score indicate healthier financial conditions, which foster positive investor expectations and enhance the market's valuation of the company. Thus, the Altman Z-Score not only serves as a measure of financial health but also acts as a fundamental signal influencing the formation of a firm's value in the capital market.

Differences in characteristics between capital markets in developed and developing countries suggest that the relationship between financial distress and firm value may not apply uniformly across all market contexts. Market inefficiencies, limited financial literacy, and the dominance of retail investors in Indonesia have the potential to prevent a company's fundamental information from being fully reflected in its stock price. On the other hand, previous research has also yielded inconsistent findings regarding the impact of financial distress on firm value, both in the manufacturing sector and other sectors. Therefore, a



more specific study is needed for the financial sector, which plays a systemic role and makes a significant contribution to the stability of the national economy. Given these conditions, this study was designed to re-examine the ability of the Altman Z-Score to predict financial distress and its impact on the value of the firm among financial sector companies listed on the Indonesia Stock Exchange for the 2022-2024 period. The results of this study are expected to provide an empirical contribution to the development of literature on emerging markets, while also serving as a basis for consideration by investors, management, and regulators in the financial industry.

LITERATURE REVIEW

When beginning a research study, it is important to have a theoretical foundation drawn from previous studies. Findings from previous research can serve as a foundation to support the current study. This study refers to previous studies on similar topics, which can serve as a guide for the current research methodology.

A study conducted by (Sari & Sembiring, 2023a) in the Journal of Management and Finance examined how financial distress, as measured by the Altman Z-Score, affects firm value in the consumer goods sector. The results of the study show that the Z-Score has a significant and positive effect on the value of the firm, meaning that the healthier a company's financial condition, the higher its value in the eyes of investors.

(Morita & Nakano, 2020) examined the effectiveness of the Altman Z-Score in detecting financial distress among publicly traded companies in Japan operating in a relatively efficient market environment. The study found that the Z-Score can consistently predict potential financial distress, and this information is immediately reflected in adjustments to stock prices.

(Asgari, 2023) found that the Altman Z-Score has a positive effect on firm value in the European financial sector. The study shows that the higher a company's financial health, the greater the value the market assigns to it. These findings confirm that strong financial condition serves as an important signal for investors in assessing a company's performance and prospects.

(Adeosun & Oladejo, 2023) studied financial companies in Nigeria and found that the Z-Score is a strong indicator for predicting bankruptcy risk and is one of the factors influencing company valuation in the capital market. The background of this study is relevant to Indonesia because both countries fall into the category of emerging markets, which tend to be less efficient and are heavily



influenced by macroeconomic conditions. Therefore, these findings serve as an important reference for determining whether the relationship.

Based on a series of previous studies, it appears that the relationship between financial distress—measured using the Altman Z-Score—and firm value still shows mixed results, both in developed and emerging markets. In countries with more efficient capital markets, such as Japan, Singapore, and Brazil, information regarding a company's financial condition tends to be reflected more quickly in market valuations, so the Z-Score serves as a strong signal for investors. Conversely, in emerging market countries such as Indonesia, Pakistan, and Nigeria, empirical findings reveal inconsistencies, in that the impact of financial distress on firm value is not always stable due to lower market efficiency, the dominance of short-term investors, and high sensitivity to macroeconomic factors. These differing results underscore the need for more focused and contextual research to re-examine whether the Altman Z-Score remains a relevant indicator for explaining a company's value, particularly in Indonesia's financial sector during the recent 2022–2024 period, which has been marked by digitalization, changes in investor behavior, and post-pandemic economic dynamics.

RESEARCH METHOD

The type of research used in this study is quantitative research. Quantitative research methods are a systematic, structured research approach that focuses on numerical data obtained from the research subjects. This data is then analyzed using statistical techniques to test hypotheses that have been formulated beforehand and to draw objective conclusions (Creswell, 2023). Quantitative research is designed to systematically examine the relationships between variables through an objective measurement process.

By applying a quantitative approach, this study can test the significance of the effect of the independent variable, namely the Altman Z-Score, on the dependent variable, namely the Firm's Value of the Firm, measured by the Tobin's Q ratio. This approach is considered appropriate because all research variables are expressed in numerical form and analyzed empirically to understand the financial relationships within companies in the financial sector listed on the Indonesia Stock Exchange.



RESULTS AND DISCUSSION

Descriptive Statistical Test

The results of the descriptive statistical test on the independent variables and the moderated dependent variables can be seen in the following table:

Table 1.
Descriptive Analysis Results

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std.Deviation
Z-Score	156	-1.71	8.38	3.6275	2.69762
Liquidities	157	-.03	12.87	5.6422	2.94432
LN_X3	156	1.61	16.93	9.3757	2.93239
DER	157	-3.38	8.97	4.5103	3.41073
LN_Y	157	-1.43	9.15	4.1376	2.76911
Valid N (listwise)	155				

Source: (SPSS 27 Output Data Processed by the author)

Through data processing using descriptive statistical analysis, the researcher obtained information regarding the minimum, maximum, mean, and standard deviation of each research variable. The results of the descriptive statistics were used to provide a general overview of the characteristics of the data used in this study. Based on the table above, it can be seen that:

1. The Z-Score variable has a total of 156 data points. The minimum value is -1.71, while the maximum value is 8.38. The mean of this variable is 3.6275, with a standard deviation of 2.69762.
2. The Liquidity variable has a sample size of 157. The minimum value is -0.03, and the maximum value is 12.87. The mean of this variable is 5.6422, with a standard deviation of 2.94432.
3. The LN X3 variable has 156 data points. The minimum value is 1.61 and the maximum value is 16.93. The mean is 9.3757 with a standard deviation of 2.93239.
4. The DER variable has 157 data points. The minimum value is -3.38 and the maximum value is 8.97. The mean of this variable is 4.5103 with a standard deviation of 3.41073.
5. The LN_Y variable has 157 data points. The minimum value is -1.43 and the maximum value is 9.15. The mean of this variable is 4.1376 with a standard deviation of 2.76911.

Overall, the total number of data points that can be used simultaneously in this study (Valid N listwise) is 155 observations.



Classical Assumption Test, F Test and T Test

The results of the normality test in this study can be seen in the following image:

Table 2.
Classical Assumption Test, F Test and T Test

Type of Test	Condition	Test Result	Conclusion
Normality	Sig >0,05	0,200	Data is normally distributed
Autocorrelation	1,5 < DW <2,5	2.116	Not present autocorrelation
Multicollinearity	Tolerance > 0,10 VIF < 10,00	X1: 0.929 X2: 0.869 X3: 0.993 X4: 0.897 X1: 1.077 X2: 1.150 X3: 1.007 X4: 1.150	Not present sign of multicollinearity
Heteroscedasticity	Sig. > 0,05	X1: 0.232 X2: 0.472 X3: 0.635 X4: 0.873	No indication of heteroscedasticity
F-test	Sig. < 0,05	0.001	The independent variables are simultaneously significant for the independent
T- test	Sig. <0,05	X1: 0.001 X2: 0.011 X3: 0.101 X4: 0.577	T-test - The regression model is valid because there is at least one independent variable that influences the dependent variable.

Source: (SPSS 27 output, 2026, and appendix list; data processed by the author)

a) Normality Test

A normality test was conducted to determine whether the data in the regression model follow a normal distribution. The test used in this study was the Kolmogorov- Smirnov test, in which the data are considered to follow a normal distribution if the is greater than 0.05. Based on the test results, a significance value of 0.200 was obtained, which is greater than 0.05; therefore, it can be



concluded that the data in this study are normally distributed and satisfy the normality assumption (Ghozali, 2018).

b) Autocorrelation Test

An autocorrelation test was conducted to determine whether there is a correlation between the residuals in one period and the residuals in other periods within the regression model. The results of the initial test using the Durbin-Watson statistic indicated the presence of autocorrelation in the regression model. Therefore, the model was corrected using the Cochrane-Orcutt method by transforming the residuals. After the transformation, a Durbin-Watson value of 2.116 was obtained. With $n = 155$ observations and $k = 4$ independent variables, the values $dL = 1.571$ and $dU = 1.679$ were obtained, placing the DW value within the range $dU < DW < 4 - dU$ ($1.679 < 2.116 < 2.321$). This indicates that the regression model does not exhibit autocorrelation and the data can be retained for further testing.

c) Multicollinearity Test

A multicollinearity test was conducted to determine whether there is a strong relationship among the independent variables in the regression model. A strong relationship among the independent variables can affect the accuracy of the regression coefficient estimates, so this test is necessary. The multicollinearity test was performed by examining the Tolerance and Variance Inflation Factor (VIF) values. A regression model is considered free of multicollinearity if the Tolerance value is greater than 0.10 and the VIF value is less than 10. The test results show that all independent variables have Tolerance values above 0.10 and VIF values below 10; therefore, it can be concluded that the regression model is free of multicollinearity (Ghozali, 2018).

d) Heteroscedasticity Test

The heteroscedasticity test is conducted to determine whether there is unequal residual variance in the regression model. A good regression model should have constant residual variance and exhibit no heteroscedasticity. In this study, the test was conducted using the Glejser test, which involves regressing the absolute values of the residuals against the independent variables. The model is deemed free of heteroscedasticity if the significance values for each variable are greater than 0.05. Based on the test results, all variables have significance values above 0.05; therefore, it can be concluded that the regression model does not exhibit heteroscedasticity.

**Model Specification Test (F-Test)**

The F-test is used to determine whether the independent variables collectively influence the dependent variable in the regression model. This test is conducted by examining the significance values; the model is considered significant if the significance value is less than 0.05. The results of the F-test in this study are presented in the following ANOVA table:

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	383.544	4	95.886	17.893	<.001 ^b
	Residual	803.839	150	5.359		
	Total	1187.383	154			

a. Dependent Variable: LN_Y

b. Predictors: (Constant), DER, LN_X3, Z-Score, Liquiditas

Figure 1.**Result of the F-Test**

Source: (SPSS 27 output, 2026, and appendix list; data processed by the author)

Based on the ANOVA results, the calculated F-value was 17.893 with a significance level of < 0.001. Since this significance level is less than 0.05, it can be concluded that the independent variables simultaneously have a significant effect on the dependent variable. Thus, the regression model in this study is deemed valid and can be used to explain the relationship between the independent and dependent variables.

Hypothesis Testing (T-Test)

The t-test is used to determine the partial effect of each independent variable on the dependent variable by examining the significance value. A variable is said to have a significant effect if the significance value is less than 0.05. The results of the t-test are presented in the following coefficient table:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.219	.769		.285	.776
	Z-Score	.492	.072	.479	6.877	<.001
	Liquiditas	.175	.068	.186	2.586	.011
	DER	.032	.058	.040	.559	.577
	LN_X3	.106	.064	.111	1.648	.101

a. Dependent Variable: LN_Y

Figure 2.**Result of the T-Test**



The test results indicate that some independent variables have significance levels below 0.05 and thus have a significant effect on the dependent variable, while other independent variables have significance levels above 0.05 and therefore do not have a significant effect on the dependent variable. Thus, it can be concluded that not all independent variables have a partial effect on the dependent variable; however, the main variables in this study still show a significant effect.

Multiple Linear Regression Test

Multiple linear regression analysis was used to determine the effect of independent variables on firm value as the dependent variable. In this study, the independent variables consisted of the Z-Score as the main variable, as well as liquidity, LN_X3, and DER as control variables.

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.219	.769		.285	.776		
	Z-Score	.492	.072	.479	6.877	<.001	.929	1.077
	Liquiditas	.175	.068	.186	2.586	.011	.869	1.150
	LN_X3	.106	.064	.111	1.648	.101	.993	1.007
	DER	.032	.058	.040	.559	.577	.897	1.115

a. Dependent Variable: LN Y

a. Dependent Variable: LN_Y

Figure 3.
Results of the Multiple Linear Regression
Source: Data Processed (2025)

Based on the results of the multiple linear regression analysis, it was found that the Z- Score variable has a positive and significant effect on firm value. Additionally, the liquidity variable also shows a positive and significant effect. Meanwhile, the LN_X3 and DER variables have a positive direction of influence but are not significant for firm value. This indicates that not all control variables have a significant influence; however, the main findings of the study still show that the Z-Score plays a role in determining firm value.

CONCLUSION

Financial Health and Firm Value

Based on the results of the Altman Z-Score calculations for companies in the financial sector listed on the Indonesia Stock Exchange for the 2022-2024 period, the financial health of these companies shows an unstable trend. This is reflected in the dominance of companies in the "financial distress" category compared to those in the "grey area" or "healthy" categories. This situation indicates that the majority of companies still face potential financial difficulties,



meaning that financial resilience varies significantly across companies. Consequently, the overall financial health of companies in this sector still requires strengthening to better withstand economic pressures. This situation is closely tied to the characteristics of the financial sector, which tends to be sensitive to economic dynamics, such as changes in interest rates, credit risk, and fluctuations in financial markets. Differences in companies' abilities to manage risk and maintain financial performance result in variations in Z-Score values across companies. Companies with lower Z-Scores tend to have higher risk levels, while those with higher Z-Scores indicate relatively better financial health.

In line with this, the results of company valuation using the Tobin's Q ratio show significant variation across companies. Some companies have high Tobin's Q values, reflecting market confidence in their prospects, while others have lower values, indicating that they have not yet received an from investors. This variation indicates that market perceptions of companies are not uniform but are influenced by each company's internal conditions.

Thus, the financial health and firm value in the financial sector during the study period showed differences across companies. This confirms that not all companies are at the same level of performance, both in terms of financial health and market valuation; therefore, more effective and sustainable financial management is needed to boost investor confidence and drive an increase in firm value.

The Effect of the Altman Z-Score on Firm Value

Based on the results of the regression analysis conducted, it was found that the Altman Z-Score has a significant impact on firm value as measured by the Tobin's Q ratio. This is indicated by a p-value less than 0.05, suggesting that a firm's financial health plays a role in determining the level of its market value. Thus, the better a company's financial health-as reflected by its Z-Score the higher its corporate value.

The results of this study indicate that the Altman Z-Score not only serves as a tool to measure the potential for financial distress but also provides insight into a company's financial performance a key consideration for investors when evaluating a company. Companies with sound financial health tend to send positive signals to the market, thereby boosting investor confidence and leading to higher stock prices, which are ultimately reflected in the Tobin's Q ratio.

Thus, the results of this study confirm that the Altman Z-Score has the ability to predict a company's value. Sound financial health boosts investor confidence, which ultimately leads to an increase in the company's market value.



Therefore, managing financial health is crucial for companies seeking to sustainably enhance their value.

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