The Influence of Altman Z-Score Bankruptcy Prediction Model on Stock Prices in the Textile and Garment Sub-Sector Companies

[1] M. Rony Muhazir, [2]Alwi, [3]Herman

[1,2,3] Sekolah Tinggi Ilmu Ekonomi Bima

ARTICLE INFO	ABSTRACT
Keywords: Altman Z-Score, Stock prices, T Test	This research aims to help investors evaluate the financial health of companies listed on the IDX. The Altman Z-Score model, given by $Z = 1.2 X1 + 1.4 X2 + 3.3 X3 + 0.6 X4 + 1,0 X5$ This study also examines the impact of the Z-Score on stock prices, which is recorded after a company releases its financial reports. A total of 3 manufacturing companies were selected for research using purposive sampling. The results of the Z-Score calculation show that there are no companies that are potentially on the verge of bankruptcy, all three companies are in the safe zone, and this shows that they are financially healthy. Simple regression analysis shows that the Z-Score value has a direct effect on stock prices. Likewise, the value of the T Test results has a significant influence on stock prices. The objective of this study is to ascertain if there is a significant correlation between the Altman Z-Score and the volatility in a company's stock price. The results of this investigation could offer valuable insights for investors, financial analysts, and stakeholders in making informed decisions and risk evaluations.
Email : Mronymuhazir.stiebima20@g mail.com	

INTRODUCTION

In Indonesia, the textile and garment manufacturing industry has experienced significant growth. In the third quarter of 2019, this sector recorded a growth of 15.08 percent, surpassing the economic growth in the same period. According to Airlangga Hartarto, Indonesia's Coordinating Minister for Economic Affairs, the manufacturing industry is considered more productive and has a broad economic impact, including increasing the added value of raw materials, increasing employment, making a significant contribution to the country's foreign exchange, and contributing significantly to tax and customs revenue. Several manufacturing sectors, such as the basic metal industry (9.94%), the textile and apparel industry (7.53%), and the transportation equipment industry (6.33%), also recorded performance above the national GDP. National economic growth is driven by the development of Indonesia's manufacturing sector in other ASEAN countries, with about 80% of its strength coming from the domestic market and the rest being the export market (www.investindonesia.go.id.(26/03/2024)).

The textile and garment company I researched has faced serious challenges since 2017 due to declining profits, compounded by the global economic crisis and the impact of the COVID-19 pandemic, which resulted in many employees being laid off. The decline in sales levels conducted by the company due to the pandemic three years ago, in 2020, has significantly impacted the company's financial performance. According to research by (Hilman & Laturette, 2021), there is a significant difference in the company's financial performance before and during the COVID-19 pandemic. This includes aspects such as asset utilization efficiency, sales growth, and the company's ability to meet its short-term obligations, which impacts investors who invest in stocks. Investing in stocks always carries a certain level of risk, and there is no guarantee that the investment will be completely risk-free. The greater the expected potential profit, the greater the risk that must be borne by the investor, and vice versa(Prasetianto et al., 2021). Stock prices and company value are interrelated, where if the stock price increases, the company value will also rise. Company value becomes an indicator or view for the public or investors in determining whether they will invest in the company(Rosmawati & Rachman, 2023). Investors certainly do not want the company where they invest to experience financial difficulties that could lead to bankruptcy. A bankrupt company will certainly harm investors; therefore, investors need to choose companies that can provide returns on their investments (Prasetianto et al., 2021). One strategy in predicting potential company difficulties is through

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financial statement analysis. The financial condition of a company is not only important for investors but also for company management in the decision-making process. Company management needs to ensure the company's financial condition is always in good shape to avoid financial problems or financial distress(AlAli, 2018). Therefore, it is important to conduct financial performance analysis and early bankruptcy prediction using methods such as the Altman Z-Score.The Altman Z-Score is an indicator used to measure the likelihood of a company going bankrupt. According to (Prasetianto et al., 2021), predicting bankruptcy for a company can help investors make investment decisions, such as whether to buy the company's stock. If the Altman Z-Score results show that the company is in a healthy financial condition and not at risk of bankruptcy, investors may choose to buy the company's stock. This can lead to an increase in stock prices due to increased demand from buyers. One method used in this research is multiple discriminant analysis, also known as the Altman Z-Score model. This company bankruptcy analysis is conducted using discriminant analysis first introduced by Edward I. Altman. According to(Sagho & Merkusiwati, 2015), Altman's research using multivariate discriminant analysis methods utilizes financial ratios as indicators of bankruptcy and non-bankruptcy. The results of this research are then known as the Z-Score method. Altman integrates several financial ratios into a predictive model using statistical techniques. This includes aspects such as asset utilization efficiency, sales growth, and the company's ability to meet its short-term obligations. There are 22 textile and garment companies listed on the Indonesia Stock Exchange. Here are the financial report data of several textile and garment manufacturing companies listed on the Indonesia Stock Exchange from 2017, including Asia Pacific Investama Tbk (MYTX), Ricky Putra Globalindo Tbk (RICY), Panasia Indo Resources Tbk (HDTX).

Table 1. Data on Total Assets, Total Liabilities, EBIT, and Stock Prices for Asia Pacific Investama Tbk (MYTX), Ricky Putra Globalindo Tbk (RICY), and Panasia Indo Resources Tbk (HDTX) from 2017 to 2022. (In Millions of Rupiah except for Stock Prices)

Emitter Code	Year	Total Assets	Total Debt	Sales	Earnings Before Interest & Tax	Stock Price
MYTX	2017	3,458,737	3,109,652	1,900,302	(309,809)	270.25
	2018	3,654,167	3,415,331	2,129,058	(192,342)	110.76
	2019	3,686,259	3,374,481	1,891,190	(265,931)	45.19
	2020	3,884,567	3,850,873	1,296,753	(136,212)	54.05
	2021	3,744,934	3,873,390	1,640,409	(102,424)	123.16
	2022	3,959,904	4,102,896	2,327,448	(81,994)	106.00
RICY	2017	1,037,820	944,179	1,600,432	25,808	147
	2018	1,211,372	1,094,692	2,107,868	29,841	164
	2019	1,311,243	1,162,598	2,151,323	28,833	150
	2020	1,449,567	1,363,926	1,286,059	(74,667)	119
	2021	1,437,105	1,390,806	1,375,931	(61,003)	95
	2022	1,408,779	1,404,921	1,214,494	(66,227)	80
HDTX	2017	4,035,086	3,701,551	1,293,363	(403,811)	1140.84
	2018	586,940	450,801	528,163	(269,305)	1175.67
	2019	423,791	353,633	8,369	(56,735)	1354.66
	2020	384,116	363,130	10,600	(57,730)	1334.56
	2021	346,377	366,809	11,764	(53,784)	1526.86
	2022	265,693	343,476	6,005	(47,529)	1414.93

Source: Secondary Data processed by, 2024.

Based on Table 1, it can be observed that the total assets of Panasia Indo Resources Tbk (HDTX) experienced a decrease from 2019 to 2022. Ricky Putra Globalindo Tbk (RICY) experienced a decrease in 2022, while Asia Pacific Investama Tbk (MYTX) experienced a decrease in 2021. The decline in total assets is attributed to the sale of unproductive assets and recurring losses experienced by the companies. Furthermore, the total debt of the emitter code RICY continued to increase from 2017 to 2022. For emitter code MYTX, there was an increase from 2019 to 2022, and emitter code HDTX experienced an increase

from 2020 to 2021. The increase in total debt occurred due to a decrease in revenue or earnings and difficulties in meeting financial obligations.

In terms of sales, emitter code HDTX experienced a decrease in 2019 and 2022. Emitter code RICY experienced a decrease in sales in 2020 and 2022, while emitter code MYTX experienced a decrease in sales from 2019 to 2020. The decline in sales is attributed to a decrease in consumer purchasing power. Both emitter codes MYTX and HDTX experienced losses over the last 6 years from 2017 to 2022, while RICY experienced losses from 2019 to 2022. The increase in losses is attributed to high production costs, where if production costs exceed the generated revenue, the companies will experience losses.

Additionally, the stock price of companies with emitter codes MYTX experienced a decrease from 2018 to 2020 and in 2022. RICY experienced a decrease in 2017 and from 2019 to 2020, while HDTX experienced a decrease in stock price in 2020 and 2022. The decline in stock prices is attributed to unstable financial performance.

METHOD

This research is a quantitative associative study which aims to determine whether there is an influence of bankruptcy predictions using the Altman Z-Score model on the stock price of companies in the textile and garment subsector listed on the Indonesia Stock Exchange (BEI). The instrument used in this study is a table containing financial reports. The report includes data from the balance sheet such as current assets, current liabilities, total assets, total debt and retained earnings. In addition, profit and loss reports which include EBIT, as well as share prices of companies in the textile and garment sector listed on the IDX are also included in this research instrument.

The sampling technique used in this research is purposive sampling, according to (Sugiyono, 2017) purposive sampling is a technique for determining samples with certain considerations which aims to obtain a representative sample. This technique allows researchers to select samples with certain considerations and purposes, not randomly. The sample criteria determined by the researcher are as follows:

1. Textile and garment companies listed on the Indonesian Stock Exchange.
2. Textile and garment companies that have published complete financial reports consecutively for at least the last 6 years.
3. Companies that have experienced losses for at least one year during the research period.

From the purposive sampling criteria determined by the researchers, there were 3 companies out of 22 textile and garment companies that met the criteria. The company is: PT. Panasia Indo Resources, Tbk (HDTX), PT. Ricky Putra Globalindo, Tbk (RICY), Asia Pacific Investama Tbk (MYTX) with 18 samples. This research was conducted with a focus on companies in the textile and garment sector listed on the Indonesia Stock Exchange (BEI). The main method used in this research is analysis of data obtained from financial reports and share prices of companies listed on the Indonesia Stock Exchange (BEI). To collect data, researchers downloaded the company's financial reports and annual reports from the IDX website, www.idx.co.id. This research uses documentation techniques and literature study in collecting data. Documentation techniques refer to the process of capturing and citing financial data through annual reports, financial reports, and stock prices of a company. researchers collect and analyze documents relevant to the research.

Meanwhile, library study techniques lead to the process of collecting data and information by reading and reviewing literature, books, journals, articles and previous research that are relevant to the research. The data analysis technique carried out in this research uses analysis methods with the SPSS model version 21 computer program, The data analysis techniques used are:

Altman Z-Score Analysis

Altman Z-Score analysis, a statistical method used to predict the probability of company bankruptcy. The testing process in this research was carried out in stages to determine the consistency of the Z-Score predicted value results with the financial ratios that form it to share prices (Andromeda Adrian, 2014)

Simple Regression Analysis

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Simple regression analysis is a regression that is based on the functional relationship of one independent variable (X) with one dependent variable (Y). Simple linear regression analysis is used to see the influence of the Altman Z-score on stock prices. The data used in this method is the Altman Z-score.

Correlation and Determination Coefficient

a.   Correlation coefficient

The correlation coefficient test aims to test the strength of the relationship between two or more variables. With the following conditions :

Table 2. Guidelines for Interpreting Correlation Coefficients

Coefficient Interval	Relationship Level
0,00 - 0,199	Very Weak
0.20 - 0,399	Weak
0,40 - 0,599	Medium
0,60 - 0,799	Strong
0.80 - 1,00	Very Strong

b.   Coefficient of determination

The coefficient of determination test aims to test the most appropriate level of accuracy by looking at the coefficient of determination value. The value of the coefficient of determination is 0 to 1 ($0 < R° < 1$).

Hypothesis Test (t Test)

The t test is a test used to determine the effect of the independent variable (Altman Z-Score) individually on the independent variable (share price). With a significance level of a = 0.05. With the following criteria:

a.   If tcount < ttable, with probability sig > 0.05, then the independent variable has no significant effect on the dependent variable (H0 is accepted).

b.   If tcount > ttable, with probability sig < 0.05, then the independent variable has a significant effect on the dependent variable (Ha is accepted).

RESULT AND DISCUSSION

Altman Z-Score Analysis

Table 3. Altman Z-Score bankruptcy prediction

Emitter Code	Year	Altman Z-Score	Criteria	Information
MYTX	2017	22148.3	Safe Zone	The company is in a healthy condition.
	2018	17356.7	Safe Zone	The company is in a healthy condition.
	2019	9281.1	Safe Zone	The company is in a healthy condition.
	2020	7261.7	Safe Zone	The company is in a healthy condition.
	2021	11983.9	Safe Zone	The company is in a healthy condition.
	2022	7361.1	Safe Zone	The company is in a healthy condition.
RICY	2017	49.6	Safe Zone	The company is in a healthy condition.
	2018	54.9	Safe Zone	The company is in a healthy condition.
	2019	54.1	Safe Zone	The company is in a healthy condition.
	2020	43.4	Safe Zone	The company is in a healthy condition.
	2021	45.3	Safe Zone	The company is in a healthy condition.
	2022	44.5	Safe Zone	The company is in a healthy condition.
HDTX	2017	6591.4	Safe Zone	The company is in a healthy condition.
	2018	56071.6	Safe Zone	The company is in a healthy condition.
	2019	82615.5	Safe Zone	The company is in a healthy condition.
	2020	79241.8	Safe Zone	The company is in a healthy condition.
	2021	89736.9	Safe Zone	The company is in a healthy condition.
	2022	6591.4	Safe Zone	The company is in a healthy condition.

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Based on the table above, it can be seen that companies with the codes MYTX, RICY and HDTX from 2017-2022 are in a healthy condition because the Z value>2.99. This happens because operational costs can be covered by company assets and company debt.

Simple Linear Regression

Table 4. Results of Simple Linear Regression Analysis

	Coefficients[a]					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	
	B	**Std. Error**	**Beta**			
1 (Constant)	3.364	.348		9.658	.000	
Altman Z-Score	.430	.062	.867	6.961	.000	

a. Dependent Variable: Stock price

From these results it is known that the constanta (a) value is 3.364, and the value Altman Z-score (b) is 0.430 so the regression equation can be written:

Y = a + bX

Y= 3.364+ 0.430X

This equation means:

- The constant is 3.364, containing the explanation that the consistent value of the participation variable is 3.364
- The regression coefficient X is 0.430. This means that for every 1% increase in value in the Altman Z-score, the share price value increases by 0.430. The regression coefficient is positive, so it is said that the influence of variable X on Y is positive.

Correlation and Determination Coefficient

The correlation coefficient (R) is a statistical measure that measures the degree to which two variables are related to each other in a sample. Following are the results of the Correlation Coefficient Test using the SPSS 2021 application.

a. Correlation coefficient

Table 5. Results of Correlation and Determination Coefficient Analysis

	Model Summary[b]			
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.867[a]	.752	.736	.653077

a. Predictors: (Constant), Altman Z-Score
b. Dependent Variable: Stock Price

Table 5. above shows the magnitude of the correlation/relationship value (R) of 0.867, which shows that there is a very strong or positive correlation between the Altman Z-score (independent variable) and stock prices (dependent variable). Because this value is between 0.80 - 1.00 (very strong). where values close to 1 indicate a very strong positive correlation, and values close to 0 indicate no correlation. Can be seen in Table 2. Guidelines for Interpreting Correlation Coefficients.

b. Coefficient Determination

The coefficient of determination test aims to test the most appropriate level of accuracy by looking at the coefficient of determination value. The value of the coefficient of determination is 0 to 1 $(0<R^\circ<1)$. If R^2 is close to 1, it can be said that the ability of the independent variables in the regression model is stronger in explaining variations in the dependent variable.

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Table 5. above shows a value (R Square) of 0.752, which means that the influence of the Altman Z-score (independent variable) and stock price (dependent variable) is 75.2%. This is a measure of how well the regression model fits the data. This result means that stock prices can be influenced by the Altman Z-Score value, but there are still many variables that can influence stock prices besides the Z-Score value variable, such as monetary and fiscal policy, development of the manufacturing sector, economic, political, security factors and so on.

Hypothesis Test (t Test)

The t test is a test used to determine the effect of the independent variable (Altman Z-Score) individually on the independent variable (share price). With a significance level of a = 0.05.

Table 6. Hypothesis Test Analysis Results (t Test)

Model		Coefficients[a]			t	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	3.364	.348		9.658	.000
	Altman Z-Score	.430	.062	.867	6.961	.000

a. Dependent Variable: Stock Price

Based on the analysis results in table 7 above, the Altman Z-score obtained a calculated t value of 6,961 and a t table of 2,119. So the calculated t value is greater than t table (t calculated 6.961 > t table 2.119). With a significance value of 0.000. So it can be concluded that with a significance value of 0.000 < 0.05, the hypothesis (Ha) which states "Altman Z-Score Model bankruptcy prediction has a partially significant effect on stock prices" is accepted. This shows that the Altman Z-Score can be used as a valid indicator in predicting stock prices.

This research is in line with research (Ayu Lestari et al., 2020), (Irama, 2018), (Lestari et al., 2016) that it can be concluded that the influence of the Altman Z-Score on stock prices shows a significant positive influence. However, this is not in line with research (Anggraeny & Suryana, 2022) which states that the influence of the Altman Z-Score on stock prices does not show a significant positive influence.

CONCLUSION

Based on calculations using the Altman Z-score method, the data shows that companies with the codes MYTX, RICY and HDTX from 2017-2022 are in a healthy condition because the Z value is> 2.99. This shows that the three companies are still able to control the finances of their respective companies. The results of research using a simple linear regression method show that the Altman Z-score (X) has a partially significant influence on the share price (Y) in companies with the codes MYTX, RICY and HDTX with a significance value of 0.000<0.05. Because the t-count value of 6.961 is greater than the t-table value of 2.119 (t count 6.961 > t table 2.119), we can conclude that the Altman Z-Score has a partially significant influence on stock prices. A significance value (Sig.) of 0.000 also indicates that this result is very significant (because 0.000 < 0.05). Based on the results of analysis through simple linear regression and t test, a decision can be made that (Ha) is **accepted**.

REFERENCE

AlAli, M. S. (2018). Predicting financial distress for mobile telecommunication companies listed in Kuwait Stock Exchange using Altman s model. *Pressacademia*, *5*(3), 242–248. https://doi.org/10.17261/pressacademia.2018.933

Andromeda Adrian, M. K. (2014). Pengaruh Analisis Kebangkrutan Model Altman terhadap Harga Saham Perusahaan Manufakturo Title. *MANAGEMENT ANALYSIS JOURNAL*, *VOL 3 NO 1*. https://doi.org/10.15294/MAJ.V3I1.3354

Hilman, C., & Laturette, K. (2021). 2659-Article Text-8300-1-10-20210708 (2). *BALANCE: Jurnal Akuntansi, Auditing Dan Keuanga*, *18*(1), 91–109.

Prasetianto, S., Rinofah, R., & Kusumawardhani, R. (2021). Pengaruh Altman Z-score terhadap Harga

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Saham dan Dampak Pandemi Covid-19. *Al-Kharaj : Jurnal Ekonomi, Keuangan & Bisnis Syariah*, *4*(2), 557–583. https://doi.org/10.47467/alkharaj.v4i2.701

Rosmawati, S., & Rachman, F. R. (2023). *Pengaruh Harga Saham Terhadap Nilai Perusahaan Pada Perusahaan Sektor Property Dan Real Estate (Studi Kasus Bursa Efek Indonesia). 6681*(6), 129–138. www.idx.co.id

Sagho, M. F., & Merkusiwati, N. K. L. A. (2015). Penggunaan Metode Altman Z-Score Modifikasi Untuk Memprediksi Kebangkrutan Bank Yang Terdaftar Di Bursa Efek Indonesia. *E-Jurnal Akuntansi*, *11*(3), 730–731. https://ojs.unud.ac.id/index.php/Akuntansi/article/download/12789/9292

Sugiyono. (2017). *Metode Penelitian Kuantitatif Kualitatif Dan R&D*. Alfabeta.

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