



## **Bankruptcy Analysis using the Altman (Z-score) and Springate (S-score) Methods at PT Alkindo Naratama Tbk 2020 – 2022**

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### **Abstract:**

The purpose of this study is to forecast PT Alkindo Naratama Tbk's probable bankruptcy in 2020–2022 using the Altman (Z-score) and Springate (S-score) techniques. This study employs a quantitative descriptive methodology. In order to gather information for this study, library research techniques and financial report data from PT Alkindo Naratama Tbk for the years 2021–2022 were employed as sources of data. PT Alkindo Naratama Tbk is located in the vulnerable category in 2020 and 2021 according to the Altman approach, as shown by a Z value of 2.22 in 2020 and 2.35 in 2021. According to the company's 2022 Z value of 1.63, there is a significant risk that the business will file for bankruptcy. In 2020 and 2021, PT Alkindo Naratama Tbk has a S value of 1.17 and 1.31 in calculations made with the Springate method, indicating that the company is in a good state. The company's S value in 2022 is expected to be 0.77, indicating that it is either close to or at high risk of going bankrupt.

**Keywords:** Altman, Bankruptcy, PT Alkindo Naratama, Springate, S-score, Z-score.



## **BACKGROUND**

Financial reports are summaries of the financial activities of the organization that come from the accounting procedure over a specific time frame. The goal of creating financial reports is to facilitate communication between report users and the financial data of the organization (Dharma et al., 2023). Financial reports can be used by report users as a foundation for decision-making. Modifications to financial reports may have an impact on user decisions, including those regarding policy direction and the decision to keep purchasing shares for investors (Pongoh & Faculty, 1981).

Financial reports, according to Dharma et al. (2023), are used to display the state of the company's finances and give a summary of its financial performance. The company's ability to successfully manage its operations is reflected in its financial performance. This success can be evaluated based on the following metrics: profitability, which measures the company's capacity to turn a profit; solvency, which measures the company's capacity to pay debts both short- and long-term; and liquidity, which measures the company's capacity to pay short-term obligations. In addition, the financial performance of the company can indicate whether it will survive or face bankruptcy.

According to Thohari et al. (2015), bankruptcy occurs when a business cannot function as a result of its incapacity to pay its debts and the expenses associated with running its operations. Ben et al. (2015) state that there are two possible causes of bankruptcy: internal and external forces. Company performance, policy, and culture are internal factors that impact bankruptcy. In the meanwhile, monetary, political, and natural disaster conditions have an impact on external elements.

Bankruptcy analysis is needed to identify early symptoms of potential bankruptcy. There are several analytical methods that can be used to predict bankruptcy. Altman formulated a formula for predicting bankruptcy called the Z-score. Z-score is a value resulting from calculating financial ratios that include the company's internal and external conditions (Thohari et al., 2015). Furthermore, the Altman bankruptcy analysis method was developed by Gordon L.V. Springate is known as Springate S-score. This method is known for its easy and accurate calculations (Ben et al., 2015).

One business that works in the paper packaging industry is PT Alkindo Naratama Tbk. According to [cnbcindonesia.com](http://cnbcindonesia.com), investors will be eager to purchase shares in PT Alkindo Naratama Tbk in 2021. Alkindo shares, on the other hand, will start to lose value in 2022 and be highly valued. According to information from PT Alkindo Naratama Tbk's financial report, the business generated a profit of IDR 100.77 billion in 2021. Nevertheless, the company's profit is expected to drop to IDR 65.76 billion in 2022, a 13.91% fall. In 2022, the company's net revenues decreased by 3.79% as well. The company's declining net sales indicate that its financial situation is not healthy. The corporation may become insolvent as a result of this situation.

PT Alkindo Naratama Tbk's potential for bankruptcy is the focus of this study, which employs the Altman (Z-score) and Springate (S-score) techniques. In addition, this study seeks to determine whether the analytical outcomes of the Altman and Springate approaches differ from one another. Researchers are interested in carrying out a study titled "Bankruptcy Analysis using the Altman (Z-score) and Springate (S-score) Methods at PT Alkindo Naratama Tbk for the 2020 - 2022 Period" in light of the background information mentioned above.



## **THEORETICAL FRAMEWORK**

### **Financial Report**

Jumingan (2014:4) states that the process of compiling a company's financial data results in financial reports. Financial reports, which are essentially generated from accounting results and processes, are also described as a vehicle for communication between data and actions carried out by interested parties with that data (Munawir, 2010:2). "Financial reports are a structured presentation of the financial position and financial performance of an entity," according to PSAK No. 1 (updated 2009). Therefore, financial reports contain crucial information for evaluating the growth of a company." The ability to use financial reports as information or input for decision-making makes them crucial. Aside from that, the goal of financial reports is to tell interested parties about the state of a business using numerical data expressed in monetary units (Nuranisa and Hamzah, 2021).

### **Financial Performance**

Herawati (2019:4) defines financial performance as a means of summarizing the financial situation of the company within a particular accounting period, including factors related to capital raising and distribution. Usually, measures of profitability, liquidity, and capital sufficiency are used to assess it. However, financial performance, in the words of Fahmi (2017:2), is a description of the success attained by the company, which may be interpreted as the results of the various operations that have been conducted. In order to comprehend and evaluate their level of success based on the financial activities they have accomplished, businesses genuinely require financial performance. Performance is used to assess if a company has properly and fully adhered to financial implementation criteria, according to Saraswati et al. (2013).

### **Bankruptcy**

Thohari et al. (2015), states that bankruptcy occurs when a firm is unable to pay its debts and the expenses associated with running its operations. In defining bankruptcy, Lesmana and Surjanto (2004: 174) state that the risk of bankruptcy is closely associated with the company's uncertainty over its ability to carry out day-to-day operations in the event that its financial status continues to decrease in an unpredictable manner.

According to Tambunan's study (2015:3), Weston & Copeland defined bankruptcy as follows:

- a. Economic failure (also known as economic distress) is the state in which a business's profit margin falls short of its cost of capital due to a lack of revenue to cover expenses.
- b. A situation of failure or financial trouble. Financial failure, often referred to as technical insolvency, and technical default, which occurs when a business does to meet one or more conditions in its debt provisions—such as a specific ratio of current assets to current debt—are the two forms of insolvency. happens when a company breaks its promises or fails to meet deadlines.

### **Bankruptcy Analysis**

According to Hanafi (2013:264), a number of factors can be used to predict the likelihood of bankruptcy, including cash flow both now and in the future, firm strategy, the caliber of management in charge of operations, and the ability to control expenditures. Through analysis of the financial records, a company's risk of bankruptcy can be determined. Business executives can learn about the state and trajectory of their organization's finances as well as past performance by examining its



financial reports. This allows them to identify areas of strength and weakness within the organization as well as potential bankruptcy (Adnan and Taufik, 2001:5).

## METHOD

A quantitative descriptive research design was employed in this study. This approach processes data numerically and computes the outcomes to provide an unbiased explanation of a situation. This study uses literature and documentation methods as data collecting techniques. Specifically, research-related data is reviewed, and secondary data in the form of financial reports is gathered via PT Alkindo Naratama Tbk's official website, [www.alkindo.co.id](http://www.alkindo.co.id).

The financial report data from PT Alindo Naratama Tbk for the years 2021–2022 is the subject of this study. The Altman Z-score and Springate S-score methods of bankruptcy analysis were employed as the data analysis tool in this study.

The following is the data analysis technique used in the research.

### Altman Method (Z-Score)

Altman formulated his method as follows:

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5$$

Variables used:

- X1 : Working Capital to Total Assets or Net Working Capital divided by Total Assets
- X2 : Retained Earnings to Total Assets or Total Retained Earnings divided by Total Assets
- X3 : Earning Before Interest and Taxes to Total Assets or Profit Before Interest and Tax divided by Total Assets
- X4 : Market Value of Equity to Book Value of Liabilities or Capital Market Value divided by Book Value of Liabilities
- X5 : Sales to Total Assets or Sales divided by Total Assets

In the Altman method there is a cut off point which is used as an indicator to determine the potential for bankruptcy of a company. The following is the cut off point for the Altman method.

**Table 1**  
**Altman Z-score Cut Off Point**

	Z-score Value
<b>Not Bankrupt, if Z &gt;</b>	2,99
<b>Bankrupt, if Z &lt;</b>	1,81
<b>Vulnerable area</b>	1,81 – 2,99

Source: Amilin (2022:8.31)

### Springate Method (S-Score)

Springate formulates its method as follows:

$$S = 1.03X1 + 3.07X2 + 0.66X3 + 0.4X4$$

Variables used:

- X1 : Working Capital to Total Assets or Net Working Capital divided by Total Assets
- X2 : Earning Before Interest and Taxes to Total Assets or Profit Before Interest and Tax divided by Total Assets
- X3 : Earning Before Taxes to Current Liabilities or Profit Before Tax divided by Short Term Debt
- X4 : Sales to Total Assets or Sales divided by Total Assets



**Table 2**  
**Springate Cut Off Point**

S-score Value	
Healthy, if S >	1,062
Bankrupt, if S <	0,862
Safe or Gray area	0,862 – 1,062

Source : Rudianto (2013:262)

## RESULT

### Bankruptcy Risk Analysis Using the Altman Method (Z-score)

**Table 3**  
**Calculation of Variable X1**

	2020	2021	2022
<b>Current Asset</b>	536,525,873,066	710,233,784,991	714,110,899,271
<b>Current Liability</b>	303,886,581,958	387,942,345,634	508,007,638,970
<b>Working Capital</b>	232,639,291,108	322,291,439,357	206,103,260,301
<b>Total Assets</b>	953,551,967,212	1,210,809,442,028	1,568,806,950,187
<b>X1</b>	<b>0.244</b>	<b>0.266</b>	<b>0.131</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024

Based on Table 3, the value of PT Alkindo Naratama Tbk's current assets from 2020 to 2021 continues to increase. This is also in line with the company's short-term liabilities which are getting higher every year. The value of the company's working capital increased in 2021, namely IDR 322.29 billion. However, in 2022 it will decrease to IDR 26.10 billion. This is because the rate of increase in short-term liabilities is greater than the increase in current assets. The value of working capital affects the value of variable X1. Variable X1 is obtained from the working capital value divided by total assets. In 2020, the value of the variable X1 is 0.244. Then, in 2022 it will increase to 0.266. Meanwhile, in 2023, the value of the variable X1 will decrease to 0.131.

**Table 4**  
**Calculation of Variable X2**

	2020	2021	2022
<b>Retained Earning</b>	202,867,859,155	277,300,978,702	341,389,319,182
<b>Total Assets</b>	953,551,967,212	1,210,809,442,028	1,568,806,950,187
<b>X2</b>	<b>0.213</b>	<b>0.229</b>	<b>0.218</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024



Based on Table 4, the value of retained earnings (retained earnings) of PT Alkindo Naratama Tbk's total assets from 2020 to 2022 has increased. The value of retained capital divided by total assets produces the variable value X2. The X2 value will increase in 2021 to 0.229. However, in 2022 it will decrease to 0.218. This could be due to a decrease in company profits in 2022 which will affect the value of retained capital. Although, the value of retained capital increased from 2021 to 2022. However, the increase was not as big as the increase from 2020 to 2021.

**Table 5**  
**Calculation of Variable X3**

	2020	2021	2022
<b>Earning Befote Interest &amp; Taxes (EBIT)</b>	83,963,236,519	129,768,148,235	84,844,590,413
<b>Total Assets</b>	953,551,967,212	1,210,809,442,028	1,568,806,950,187
<b>X3</b>	<b>0.088</b>	<b>0.107</b>	<b>0.054</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024

Table 5 indicates that in 2022, profit will drop significantly. From IDR 129.76 billion to IDR 84.84 billion, the prior amount. This affects variable X3, which is calculated by dividing total assets by earnings before interest and taxes. The X3 value in 2020 was 0.088. Then, it increased to 0.107 in 2021. Moreover, it will drop to 0.054 in 2023.

**Table 6**  
**Calculation of Variable X4**

	2020	2021	2022
<b>Market value of Equity</b>	110,000,000,000	131,685,602,000	131,685,602,000
<b>BV of Total Liability</b>	363,428,319,392	507,406,880,546	803,638,004,050
<b>X4</b>	<b>0.303</b>	<b>0.260</b>	<b>0.164</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024

Table 6 shows the result of the computation of variable X4, which is obtained by dividing the market value of capital by the book value of all of the company's obligations. The company's X4 value was 0.303 in 2020. Moreover, it dropped to 0.260 in 2021 as a result of the rise in the book value of the company's liabilities outpacing the increase in its capital market value. The X3 value then declines once more to 0.164 in 2023. This resulted from a rise in liabilities that did not correspond with a rise in the capital market value.

**Table 7**  
**Calculation of Variable X5**

	2020	2021	2022
<b>Sales</b>	1,105,920,883,249	1,457,266,932,664	1,401,914,243,306
<b>Total Assets</b>	953,551,967,212	1,210,809,442,028	1,568,806,950,187
<b>X5</b>	<b>1.160</b>	<b>1.204</b>	<b>0.894</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024



Table 7 shows that in 2021, PT Alkindo Naratama Tbk experienced an increase in sales so that the X5 value became 1,204, which was initially 1,160. However, in 2022, sales fall which causes the value of the X5 to also fall to 0.894.

**Table 8**  
**Recapitulation of Altman Z-score Result for 2020-2022**

Financial Ratio	2020	2021	2022
X1	0.244	0.266	0.131
X2	0.213	0.229	0.218
X3	0.088	0.107	0.054
X4	0.303	0.260	0.164
X5	1.160	1.204	0.894
Z-Score	2.22	2.35	1.63
Prediction	<b>Prone</b>	<b>Prone</b>	<b>Bankrupt</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024

As a result, PT Alkindo Naratama is classified as susceptible in 2020. The Z value for the company in 2020 is 2.22, which falls between 1.81 and 2.99 based on the calculations in Table 3. This demonstrates that although the company's finances are sound, bankruptcy is still an option.

Furthermore, in 2021 the Z value for PT Alkindo Naratama Tbk is 2.35, which is between the values 1.81 and 2.99. similar to 2020 the company was in the vulnerable category. However, there is an increase indicating better financial conditions than in 2020 and a smaller potential for bankruptcy compared to the previous year. Then, in 2022 the Z value for PT Alkindo Naratama Tbk will be 1.63, which means it will be below 1.81. In the Altman method, PT Alkindo Naratama Tbk in 2022 will be declared bankrupt or has a large risk of bankruptcy.

#### **Bankruptcy Risk Analysis Using The Springate Method (S-score)**

**Table 9**  
**Calculation of Variable X1**

	2020	2021	2022
<b>Current Asset</b>	536,525,873,066	710,233,784,991	714,110,899,271
<b>Current Liability</b>	303,886,581,958	387,942,345,634	508,007,638,970
<b>Working Capital</b>	232,639,291,108	322,291,439,357	206,103,260,301
<b>Total Assets</b>	953,551,967,212	1,210,809,442,028	1,568,806,950,187
<b>X1</b>	<b>0.244</b>	<b>0.266</b>	<b>0.131</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024



The calculation of variable X1 in the Springate method in Table 3 shows the same results as the calculation of variable X1 in the Altman method. This is because the ratio used between the two methods is the same.

**Table 10**  
**Calculation of Variable X2**

	2020	2021	2022
<b>Earning Before Interest &amp; Taxes (EBIT)</b>	83,963,236,519	129,768,148,235	84,844,590,413
<b>Total Assets</b>	953,551,967,212	1,210,809,442,028	1,568,806,950,187
<b>X2</b>	<b>0.088</b>	<b>0.107</b>	<b>0.054</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024

Based on Table 10, the calculation of the variable X2 in the Springate method uses the same ratio as the calculation of the variable

**Table 11**  
**Calculation of Variable X3**

	2020	2021	2022
<b>Earning Before Taxes (EBT)</b>	83,963,236,519	129,768,148,235	84,844,590,413
<b>Current Liability</b>	303,886,581,958	387,942,345,634	508,007,638,970
<b>X3</b>	<b>0.276</b>	<b>0.335</b>	<b>0.167</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024

In accordance with the calculations in Table 11, the value of variable X3 in 2021 will increase to 0.335. Meanwhile, in 2022 it will decrease to 0.167. This is because in 2022 there will be a decrease in the value of profit before tax, while short-term liabilities will increase.

**Table 12**  
**Calculation of Variable X4**

	2020	2021	2022
<b>Sales</b>	1,105,920,883,249	1,457,266,932,664	1,401,914,243,306
<b>Total Assets</b>	953,551,967,212	1,210,809,442,028	1,568,806,950,187
<b>X4</b>	<b>1.160</b>	<b>1.204</b>	<b>0.894</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024

The calculation of variable X4 in the Springate method uses the same comparison as variable X5 in the Altman method, namely sales divided by total assets. This causes the X4 value of the Springate method to be the same as the X5 value of the Altman method.

**Table 13**





**Springate Analysis Results For 2020-2022**

Financial Ratio	2020	2021	2022
X1	0.244	0.266	0.131
X2	0.088	0.107	0.054
X3	0.276	0.335	0.167
X4	1.160	1.204	0.894
S-Score	1.17	1.31	0.77
Prediction	<b>Healthy</b>	<b>Healthy</b>	<b>Bankrupt</b>

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024

In Table 4, in 2020 PT Alkindo Naratama Tbk had an S value of 1.17, which indicates that the company is in the healthy category or does not have the potential to go bankrupt because the company's S value is above 1.062. In 2021 it also shows the same predicted results, namely the company is in the healthy category. The company's S value in 2021 is 1.31, which is above 1.062. Furthermore, in 2022, PT Alkindo Naratama Tbk's S value will be 0.77, which is below 0.862. This proves that the company is in the bankruptcy category or at high risk of bankruptcy.

**Comparison of Altman (Z-score) and Springate (S-score) Method Predictions**

**Table 14**  
**Comparison of Altman (Z-score) and Springate (S-score) Method Predictions**

Altman Method (Z-score)				Springate Method (S-score)			
Financial Ratio	2020	2021	2022	Financial Ratio	2020	2021	2022
X1	0.244	0.266	0.131	X1	0.244	0.266	0.131
X2	0.213	0.229	0.218	X2	0.088	0.107	0.054
X3	0.088	0.107	0.054	X3	0.276	0.335	0.167
X4	0.303	0.260	0.164	X4	1.160	1.204	0.894
X5	1.160	1.204	0.894				
Z-Score	2.22	2.35	1.63	S-Score	1.17	1.31	0.77
Prediction	Prone	Prone	Bankrupt	Prediction	Healthy	Healthy	Bankrupt

Source: Processed from PT Alkindo Naratama Tbk Financial Report, 2024



## DISCUSSION

We may compare the two analysis approaches to determine if the prediction outcomes are the same or different based on the results of calculations made using the Altman (Z-score) and Springate (S-score) methodologies. Table 5 shows that there are differences in the projected values for 2020 and 2021 between the two methodologies' computed values. The Altman approach has categorized PT Alkindo Naratama Tbk as susceptible for 2020 and 2021. This means that even though the company is financially stable, there is a chance that it will declare bankruptcy. According to the Springate (S-score) technique, PT Alkindo Naratama Tbk is either in the healthy category or does not have the potential to become bankrupt in 2020 and 2021. In contrast, the Altman (z-score) and Springate (S-score) approaches yield comparable prediction findings in the 2022 calculations, indicating that PT Alkindo Naratama Tbk is either in the bankruptcy category or has a high probability of filing for bankruptcy.

The disparity between the ratios employed in the Altman and Springate method variables may be the cause of the disparity between the forecast results in 2020 and 2021. There exists a variation in the quantity of variables employed in the two techniques. Whereas the Springate approach only requires four variables, the Altman method makes use of five.

## CONCLUSION

Based on the findings of the Altman method (Z-score) and Springate method (S-score) analyses of PT Alkindo Naratama Tbk's potential bankruptcy, it can be deduced that the Altman method (Z-score) analysis predicts PT Alkindo Naratama Tbk's bankruptcy in 2020 with a value of 2.22, meaning the company will fall into the vulnerable category. PT Alkindo Naratama Tbk then falls into the vulnerable category in 2021, as indicated by its Z rating of 2.35. In contrast, the company's Z value in 2022 is 1.63, indicating a high likelihood of bankruptcy or the possibility of bankruptcy altogether.

According to the findings of the analysis conducted using the Springate method, PT Alkindo Naratama Tbk has a S value of 1.17 and 1.31 in 2020 and 2021, respectively, indicating that the business is doing well. In contrast, the company's S value in 2022 will be 0.77, indicating that it is either close to or very likely to file for bankruptcy.

The 2020 and 2021 forecast findings from analyses utilizing the Altman (Z-score) and Springate (S-score) approaches differ from one another. According to the Altman approach, PT Alkindo Naratama Tbk is classified as susceptible in 2020 and 2021, meaning that even though the company is doing well financially, bankruptcy is still a possibility. In the meantime, PT Alkindo Naratama Tbk in 2020 and 2021 is in the healthy group or has no chance of going bankrupt, according to the Springate (S-score) approach. In contrast, the Altman (z-score) and Springate (S-score) approaches yield comparable prediction findings in the 2022 calculations, indicating that PT Alkindo Naratama Tbk is either in the bankruptcy category or has a high probability of filing for bankruptcy.

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