

# ANALYSIS ON FINANCIAL DISTRESS USING ALTMAN Z-SCORE, SPRINGATE, AND ZMIJEWSKI METHODS IN TELECOMUNICATION COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE

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## ABSTRACT

*This study aims to predict and analyze the potential for financial distress in telecommunications companies listed on the Indonesia Stock Exchange (IDX) during the 2019-2022 period using the Altman Z-Score, Springate, and Zmijewski models. The type of data used is secondary data in the form of financial statements of telecommunications companies listed on the IDX for the 2019-2022 period. The analysis was carried out using the financial distress prediction method of the Altman Z-Score, Springate, and Zmijewski models. The results showed that there were three companies predicted to have potential financial distress using the Altman Z-Score and Springate models during the observed year. While the calculation results with the Zmijewski Model in 2019 and 2020 there is one company that is predicted to potentially experience financial distress.*

**Keywords:** Altman Z-Score, Springate, Zmijewski, Financial Distress

## INTRODUCTION

Economic and technological growth that occurs simultaneously recently causes increasingly fierce business competition, thus companies are required to constantly innovate in business and improve their performance in order to survive and compete. Companies that are unable to compete will automatically be displaced from their business area, and companies that are unable to maintain their performance will experience financial distress. Given this, it is important for companies to be able to identify early signs of financial health and indications of possible financial distress.

According to Subramanyam and John (2014) there are several indicators that show whether a company is experiencing financial distress. The characteristics of companies experiencing financial distress are a reduction in asset turnover (TATO), a decrease in sales, lower profits and profitability, reduced working capital, and higher debt levels.

To overcome and minimize the occurrence of financial distress, companies can monitor financial conditions using financial analysis techniques. There are various bankruptcy prediction tools that can be used as predictions and early warning systems for financial distress. The model can be used as a tool to identify and even improve the situation before it reaches a critical condition or bankruptcy. Financial distress detection tools that can be used are the Altman Z-Score, Springate, and Zmijewski methods. These methods of analysis are known because

besides it is easy to use, the accuracy in ensuring the prediction of financial distress is also very accurate (Peter & Yoseph, 2011).

The Z-Score method was first proposed by Edward I Altman in 1968 as a product of his study. After selecting 22 financial ratios, he found five ratios that can be combined to see companies experiencing financial distress and nonfinancial distress. Altman conducted several studies with different company objects. Therefore, Altman produced several different formulas to be used in several companies with different conditions. This model emphasizes profitability as the most influential component of financial distress (Rudianto, 2013).

The Springate method was developed in 1978 by Gorgon L.V. Springate. The Springate model is a ratio model that uses multiple discriminant analysis (MDA). The MDA method requires several financial ratios to form a good model. To determine which ratios can detect the possibility of financial distress, Springate uses MDA to select four ratios from 19 financial ratios popular in the literature, which can distinguish between bankrupt and non-bankrupt companies.

The Zmijewski method uses profitability (ROA), leverage (Debt Ratio), and liquidity (Current Ratio) ratios to analyze whether the company is experiencing financial problems or not. The Zmijewski method has an accuracy of 94.9%.

With the increasing demand for telecommunications, the business of providing telecommunications services is currently facing increasingly tough challenges. Competition in the telecommunications industry in Indonesia is increasingly intense, with various products and services occupying their respective market shares at competitive prices. These different offerings provide customers with a variety of choices, making it easier for customers to choose the products and services they want and easily switch from the service provider they used before. This situation will certainly affect the company's revenue. The current competitive situation is considered unhealthy and harmful to the telecommunications industry.

Competition conditions that are considered unhealthy cause telecommunications companies to increase investment to win the competition. Increased investment also has an impact on the company's finances which provides an opportunity to generate profits by optimizing the use of capital so as to avoid financial difficulties. Companies that are unable to compete may experience bankruptcy. What is the prediction of financial distress in telecommunication companies listed on the IDX for the 2019-2022 period as showed by the Altman Z-Score, Springate, and Zmijewski methods? The aim of this study was to predict and analyze the potential for financial distress as showed by the Altman Z-score, Springate, and Zmijewski methods in telecommunications companies listed on the IDX for the 2019-2022 period.

## **LITERATURE REVIEW**

### **Financial Ratio Analysis**

Financial ratio analysis is an analysis that describes a relationship or balance between a certain amount and another amount, and uses an analytical tool in the form of a ratio that can explain or provide an overview to the analyser about the good or bad state of a company's financial position, especially if the ratio number is compared to the comparative ratio number used as a standard (Munawir, 2010). Financial ratio analysis is carried out to determine the strengths or weaknesses of

the company, this information is important for management to evaluate the performance achieved and to develop future company plans (Sudana, 2011).

According to Kasmir (2019), there are six financial ratios used in analyzing the company's financial statements, namely:

1. Liquidity Ratio, a ratio that describes the company's ability to meet short-term obligations.
2. Solvency ratio or leverage ratio, a ratio used to measure the extent to which the company's assets are financed with debt.
3. Profitability Ratio, a ratio used to assess the company's ability to make a profit.
4. Activity Ratio, a ratio used to measure the effectiveness of the company in using its assets.
5. Growth Ratio, a ratio that describes the company's ability to maintain its economic position amid economic growth and its business sector.
6. Valuation Ratio, a ratio that provides a measure of management's ability to create market value of its business above investment costs.

### **Financial Distress**

According to Fitriani and Huda (2020), financial distress conditions begin with the inability of the company's management to manage the company, which results in operating losses or net losses for the current year or operating cash flow that is smaller than operating profit. Companies that experience financial distress on an ongoing basis for a long period of time have a high potential for bankruptcy. Susanti (2020) suggests that financial distress conditions can be seen based on the debt default category, which is a condition where a company cannot fulfill its obligations to pay debts or there is the potential for a company to fail to pay its maturing debts by renegotiating with creditors who provide loans. Meanwhile, Hanifah (2013) defines financial distress as a stage of decline in financial condition that occurs before bankruptcy or liquidation.

Basically, financial distress is a situation where a company has difficulty in fulfilling its obligations, a situation where the company's revenue cannot cover total costs, experiencing losses to creditors, this situation is an early symptom of economic failure (Atika, et al., 2012).

### **Bankruptcy**

Bankruptcy is a situation where the company fails or is no longer able to fulfill all the obligations of the lender (debtor) because the company lacks funds to run and continue its business so that the achievement of economic goals is not fulfilled (Wongsosudono et al, 2013).

There are several indicators that managers must pay attention to, as stated by Harnanto in Nugroho and Mawardi (2012), namely:

1. Decrease in sales volume due to changes in consumer tastes or demand.
2. Increase in production costs
3. Increased level of competition
4. Failure to expand
5. Ineffectiveness in carrying out the receivables collection function
6. Lack of banking support or facilities (credit)
7. High level of dependence on debt

### **Altman Z-Score Model**

Altman (1968) was the first to apply Multiple Discriminant Analysis. Altman's discriminant analysis is one of the statistical techniques that can be used to predict the bankruptcy of a company. Altman has combined several ratios into a prediction model with statistical techniques. According to Supardi (2003) Altman is a discriminant used to predict corporate bankruptcy with a very famous term called Z-Score. Altman found five types of financial ratios that can be combined to see the difference between bankrupt and non-bankrupt companies.

Altman Z-Score is a multivariable equation used by Altman in order to predict the level of bankruptcy. Altman uses a statistical model called discriminant analysis, precisely multiple discriminant analysis (MDA). The formula of Altman Z-Score is as follows (Rudianto, 2013):

$$Z = 6,56X1 + 3,26X2 + 6,72X3 + 1,05X4$$

Notes :

X1 = working capital / total assets

X2 = retained earnings / total assets

X3 = earning before interest and taxes / total assets

X4 = market value of equity / book value of total debt

The classification of cut off values for the Altman Z-Score model is:

1. If the Z value < 1.11, there is a potential for financial distress
2. If the value of  $1.11 \leq Z \leq 2.6$ , it includes a grey area (vulnerable)
3. If the Z value > 2.6 does not have the potential to experience financial distress.

### **Springate Model**

Springate (1978) produced a bankruptcy prediction made by following Altman's procedure. Springate uses step-wise Multiple Discriminate Analysis (MDA) to select 4 of 19 popular financial ratios that best distinguish between healthy and unhealthy businesses. Springate's formula is as follows (Rudianto, 2013):

$$S = 1,03A + 3,07B + 0,66C + 0,4D$$

Notes:

A = Working Capital to total Assets

B = Earnings Before Interest and Taxes to Total Assets

C = Earnings Before Taxes to Current Liabilities

D = Total Sales to Total Assets

The classification of cut off values for the Springate model is:

1. If the S value > 0.862, it is not potential to experience financial distress.
2. If the S value < 0.862, it is potential to experience financial distress.

### **Zmijewski Model**

Similar to the Altman and Springate models, this model is also a ratio model that uses Multiple Discriminant Analysis (MDA) to predict the viability of a company. The Zmijewski model uses three ratio analyses, namely measuring

company performance, leverage and liquidity for bankruptcy prediction models. The formula of Zmijewski is as follows (Rudianto, 2013).

$$X = -4,3 -4,5 X1 + 5,7 X2 -0,004X3$$

Notes:

X1 = Net Income to Total Assets (ROA)

X2 = Debt Ratio (TLTA)

X3 = Current Ratio (CACL)

The cut off value classifications for the Zmijewski model are:

1. If the X value > 0, it has the potential to experience financial distress.
2. If the value of X < 0, it has no potential to experience financial distress

## RESEARCH METHOD

The object of this study is to predict financial distress in telecommunications companies listed on the IDX in 2019-2022 using the Altman Z-Score, Springate, and Zmijewski models.

This study uses secondary data derived from the financial statements of each sample company taken during the observation period, from 2019 to 2022, collected from the official IDX website, [www.idx.co.id](http://www.idx.co.id), and the pages of each sample company. The collected data is then analyzed using three methods, namely the Altman Z-score, Springate and Zmijewski methods to predict and analyze the possibility of financial distress in telecommunications companies listed on the IDX.

## RESULT AND DISCUSSION

The calculation results obtained using the Altman Z-Score model are presented in Table 1 below:

**Table 1. Altman Z-Score Model Calculation Results**

Code	year	Z-Score	Category
EXCL	2019	-0,436	FD
	2020	-0,332	FD
	2021	-0,173	FD
	2022	-0,195	FD
ISAT	2019	0,254	FD
	2020	-0,354	FD
	2021	-0,136	FD
	2022	0,065	FD
FREN	2019	-3,538	FD
	2020	-2,781	FD
	2021	-2,588	FD
	2022	-2,010	FD
TLKM	2019	3,101	NFD
	2020	2,636	NFD
	2021	3,175	NFD
	2022	2,989	NFD

Based on the calculation results in table 1, it can be seen that *PT XL Axiata Tbk*, *PT Indosat Tbk*, and *PT Smartfren Telekom Tbk* during the observation period

2019-2022 are predicted to have the potential to experience Financial Distress. This condition is possible because the company is less able to manage and fulfill its short-term obligations and less able to manage its assets effectively in generating profits. *PT Telekomunikasi Indonesia Tbk* in the observation period 2019-2022 was in a Nonfinancial Distress condition, which means that in that period, *PT Telekomunikasi Indonesia Tbk* had a healthy financial condition.

The calculation results using the Springate model are presented in Table 2 below:

**Table 2. Springate Model Calculation Results**

Code	Year	Z-Score	Category
EXCL	2019	0,091	FD
	2020	0,015	FD
	2021	0,154	FD
	2022	0,108	FD
ISAT	2019	0,262	FD
	2020	0,063	FD
	2021	0,594	FD
	2022	0,305	FD
FREN	2019	-0,569	FD
	2020	-0,244	FD
	2021	-0,098	FD
	2022	0,080	FD
TLKM	2019	1,185	NFD
	2020	1,038	NFD
	2021	1,121	NFD
	2022	0,939	NFD

The same results are showed from calculations using the Springate method. Based on table 2 analysis using the Springate model *PT XL Axiata Tbk*, *PT Indosat Tbk*, and *PT Smartfren Telekom Tbk* in the 2019-2022 period are predicted to have the potential to experience Financial Distress. The causes of these conditions can be seen in the lower level of liquidity and profitability in each company every year due to negative working capital so that the company is not effective and efficient in generating business profits. Meanwhile, *PT Telekomunikasi Indonesia Tbk* in the 2019-2022 period is predicted to have no potential to experience Financial Distress so that it can be said that *PT Telekomunikasi Indonesia Tbk* can be considered healthy.

The calculation results using the Zmijewski model are presented in Table 3 below:

**Table 3 Zmijewski Model Calculation Results**

Code	Year	Zmijewski model	Category
EXCL	2019	-0,390	NFD
	2020	-0,236	NFD
	2021	-0,255	NFD
	2022	-0,343	NFD
ISAT	2019	0,037	FD
	2020	0,271	FD
	2021	-0,015	NFD
	2022	-0,397	NFD
FREN	2019	-0,870	NFD
	2020	-0,246	NFD
	2021	-0,219	NFD
	2022	-0,636	NFD
TLKM	2019	-2,185	NFD
	2020	-1,932	NFD
	2021	-2,145	NFD
	2022	-2,147	NFD

Table 3 presents the results of calculations using the Zmijewski model. The analysis results show that *PT XL Axiata Tbk*, *PT Smartfren Telekom Tbk*, and *PT Telekomunikasi Indonesia Tbk* are predicted not to have the potential to experience Financial Distress. Meanwhile, *PT Indosat Tbk* in the 2019 and 2020 periods has the potential to experience Financial Distress, then in 2021 and 2022 it experienced an increasingly better condition, with predictions that it has no potential to experience Financial Distress. This can happen because *PT Indosat Tbk* has increased the number of assets, so that it can increase the amount of revenue.

## CONCLUSION AND SUGGESTIONS

### Conclusion

Based on the results of study and discussion conducted on four Telecommunication companies listed on the IDX for the 2019-2022 period, it can be concluded that with calculations using the Altman Z-Score and Springate models, as many as three telecommunication companies have the potential to experience Financial Distress, namely PT XL Axiata Tbk, PT Smartfren Telekom Tbk, and PT Indosat Tbk.

The results of calculations using the Zmijewski method show different results. PT Indosat Tbk in 2019 and 2020 is predicted to have the potential to experience financial distress and improve its condition in 2021 and 2022 with the results of not having the potential for financial distress. While the other three companies, namely PT XL Axiata Tbk, PT Smartfren Telekom Tbk, and PT Telekomunikasi Indonesia Tbk, are predicted not to have the potential to experience financial distress during the observation period.

### Suggestions

Companies can use the prediction results of these three models as an early warning of potential financial distress, so that companies, investors or creditors can be more careful so that they do not experience bankruptcy.

Future studyers are expected to develop study methods to measure financial distress with other objects and study methods such as the Foster, Grover, Fulmer,

Ohlson, and Zavgren methods, and can add measurement calculations to determine which method is the most accurate in the study.

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