

## Financial Distress Analysis Using the Altman Z-Score Method at PT. Indofarma Tbk Period 2019 to 2022

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Article Information		Abstract
Submission date	10 December 2023	<p><b>Research objectives:</b> This research aims to measure the level of financial distress and the potential for bankruptcy that may occur at PT. Indofarma Tbk.</p> <p><b>Design/Method/Approach:</b> The research method applied is quantitative descriptive, using a population consisting of the financial statements of PT. Indofarma Tbk., accessed through the website <a href="http://www.idx.co.id">www.idx.co.id</a>, particularly in the form of financial reports from 2019 to 2022. The analysis technique employed is the Altman Z-Score method, utilizing five ratios: the ratio of working capital to total assets, the ratio of retained earnings to total assets, the ratio of earnings before interest and taxes to total assets, the ratio of equity book value to total debt book value, and the ratio of sales to total assets.</p> <p><b>Research Findings:</b> The research results indicate that PT. Indofarma Tbk. is predicted to face financial distress and the risk of bankruptcy from 2019 to 2022. Z-Score values for those years below 1.8 indicate that PT. Indofarma Tbk. is estimated to experience bankruptcy or financial distress.</p> <p><b>Keywords :</b> <i>bankruptcy, financial distress, Altman Z-Score</i></p>
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### 1. Introduction

The increasingly intense competition among companies in this era of globalization forces them to strive harder to sustain their businesses. Numerous management strategies have been designed to maintain consumers as a source of revenue. The tight competition necessitates effective management, resulting in the ability to dominate a broad market share with good performance. Faced with competition, every company is required to continuously enhance the effectiveness and efficiency of its management by evaluating tactics and corporate policies. The evaluation is conducted to assess the performance and health of the company in winning the competition, achieving economic growth, increasing profits, return on investment, port efficiency, and shaping the economic value of the company. [1].

The increasing competition and market conditions changes require manufacturers to carefully address and make decisions regarding their companies. The performance of a company can be measured through the analysis of financial statements. The primary benefit of financial statement analysis is to provide an overview of the company's performance, which can be used to project aspects of the company's financial future. The goal is to prevent the company from a crisis leading to bankruptcy and to serve as a reference for managers, investors, and owners of the company in making policies.

For both publicly traded and privately held companies, financial statements serve as

records of information that reflect the financial condition of the company at a specific point in time or over a particular period. If a company consistently demonstrates poor performance, it may be in a state of financial distress, which is an early symptom or indicator that the company is potentially facing bankruptcy. [2]. Bankruptcy can be attributed to two main factors: internal factors, which include company performance, corporate policies, and company culture; and external factors, such as economic conditions, political situations, and natural disasters.[3].

The bankruptcy of a company typically begins with the presence of a financial crisis warning or what is commonly referred to as financial distress warning. In this scenario, a company faces financial difficulties in generating profits, with a continuous decline in earnings from year to year. In other terms, the company is experiencing a failure in its operations to achieve its objectives. Essentially, companies always strive to survive in the long term, but market conditions can sometimes change, making it challenging for businesses to adapt, leading to prolonged crises and eventual bankruptcy. Bankruptcy is usually defined as the failure of a company to conduct its operations successfully to generate profits. According to Law No. 4 of 1998, bankruptcy is a condition in which an institution is declared by a court decision if the debtor has two or more creditors and fails to pay at least one overdue and collectible debt.

Financial difficulty is a situation where the company's operating cash flow is insufficient to meet its current obligations (such as trade payables or interest expenses), and the company is forced to take corrective actions. Financial difficulty represents a very serious liquidity issue that cannot be resolved without changes in the company's operations or structure. The information about financial difficulty serves as an early warning of bankruptcy, enabling management to take swift action to prevent issues before bankruptcy occurs. [5].

Financial failure can be defined as insolvency, which distinguishes between cash flow basis and equity basis. Insolvency on a cash flow basis has two forms: technical insolvency and insolvency in the sense of bankruptcy. Technical insolvency occurs when a company is considered failed if it cannot meet its obligations when they come due. This can happen even if the total assets exceed total liabilities, or if the company fails to meet one or more conditions in its debt covenants, such as the current ratio of current assets to current liabilities or the net worth ratio to total assets as required. Insolvency also occurs when cash flow is insufficient to meet principal repayments on a specific date. Bankruptcy in the sense of insolvency is defined as bankruptcy in terms of having a negative net worth in the conventional balance sheet or a present value and expected cash flow smaller than liabilities. [6].

Financial distress is a condition of financial difficulty in a company, characterized by a decline in profit, the inability of the company to settle debts, and obligations presented in the financial statements by comparing them with the financial statements of previous periods. [7]. Financial distress can also be defined as a financial condition in which a company experiences severe liquidity difficulties, rendering it incapable of conducting operations effectively. According to Altman (1968), financial distress is defined by using financial figures and representing them in a numerical form, known as the Z-Score. The Z-Score serves as a reference to determine whether a company has the potential to go bankrupt or not. [4]. Altman also classifies financial distress into four general terms, namely:

- a. Economic Failure occurs when a company's revenue is unable to cover the total costs, including capital costs. Businesses experiencing this situation can continue their operations as long as creditors are willing to provide additional capital, and owners can accept a return rate below the market interest rate.
- b. Business Failure is often used to describe various unsatisfactory business conditions. Business Failure refers to a company ceasing operations due to its inability to generate profits or generate sufficient income to cover expenses. Even a profitable business can fail if it does not generate enough cash flow to meet its expenditures.
- c. Insolvency can be distinguished into two categories:
  - 1) Technical insolvency, a condition in which a company is unable to meet its due obligations due to insufficient cash flow.
  - 2) Insolvency in Bankruptcy Sense, a condition in which total liabilities exceed the market value of the company's total assets, resulting in negative equity.
- d. Legal Bankruptcy is a formal form of bankruptcy that has been legally sanctioned.

Compared to other prediction methods, the Z-Score analysis method demonstrates higher accuracy in predicting the performance of a company. It can effectively forecast the financial health of a company in the future, indicating whether the company is in good health, at risk of bankruptcy, or already in a bankrupt state. This information is crucial for investors or stakeholders considering investments in the company, helping them decide whether to invest or not. For company leaders, it serves their interests by enabling them to make informed decisions that can be justified to shareholders or investors.

Based on a previous study conducted by Cintya Meiske Idi and Johanis Darwin Borolla (2021) regarding the analysis of financial distress using the Altman Z-Score method on PT. Golden Plantation Tbk. during the period 2014-2018, the results showed that the Altman Z-Score method was effective in predicting financial distress in the cosmetic company. The study suggested adding other variables in testing for financial distress to enhance the accuracy of predictions.

The study conducted by Sri Fitri Wahyuni and Rubiyah (2021) states that the Altman method is the most suitable and accurate method for predicting financial distress. However, there is also a previous study by Fitri Listyarini (2020) that suggests the Altman Z-Score method may not always be the most suitable for predicting financial distress. The study conducted a comparative analysis of financial distress prediction using the Altman, Springate, and Zmijewski models. The findings indicate that the Zmijewski model is the most accurate in predicting financial distress.

Table 1.1  
 Profit/Loss Table PT. Indofarma Tbk. year 2017-2022.  
 (as of December 31)

No.	Year	Profit/Loss (Rp)	Selling (Rp)
1.	2017	(46.283.000.000)	1.631.317
2.	2018	(32.736.000.000)	1.592.980
3.	2019	7.960.962.724	1.359.175.249.655
4.	2020	27.580.910	1.715.587.654.399
5.	2021	(37.571.241.226)	2.901.986.532.879
6.	2022	(428.463.000.000)	1.144.108.230.742

Source : data is processed, 2023

The data above illustrates the fluctuation in profit/loss conditions experienced by the company over the past six years. In the financial report, a decrease in net sales is evident, dropping from the previous amount of Rp1.63 trillion in 2017 to Rp1.59 trillion in 2018. The recorded loss for 2018 amounted to Rp32.73 billion, a decrease compared to the 2017 loss of Rp46.28 billion. Based on the data presented in Table 1.1, it is observed that the net profit of PT Indofarma (Persero) Tbk. decreased from 2019 to 2021. In 2019, PT Indofarma (Persero) Tbk. achieved a net profit of Rp7,960,962,724. In 2020, amidst the Covid-19 pandemic in Indonesia, which significantly increased demand in the pharmaceutical and health sectors, PT Indofarma (Persero) Tbk. experienced a decrease in net profit of over 100%, resulting in a net profit of Rp27,580,910. Subsequently, in 2021, during the Covid-19 pandemic, the company incurred a significant loss, with a net loss amounting to -Rp37,571,241,226. In the 2022 period, the company reported net sales of Rp1.14 trillion, a 62.07% decrease compared to the previous year's Rp2.9 trillion. After deducting income tax expenses, the company recorded a current year loss attributable to the parent entity of Rp428.46 billion. This loss increased compared to the previous year's loss of Rp37.57 billion.

PT. Indofarma Tbk. is a pharmaceutical company listed on the Indonesia Stock Exchange that has faced challenges, specifically a decline in net profit during the period from 2019 to 2022. Net profit, being the net gain expected by the company, is anticipated to increase each year. This increase is crucial for assessing the financial performance of the company and determining whether it is in good or poor financial health. If the net profit experiences a decline, it indicates characteristics of financial distress or financial difficulties for the company.

### 1.1. Statement of Problem

Based on the background provided above, the research problem can be formulated as follows: "What is the potential for bankruptcy in PT. Indofarma Tbk. for the period 2019 to 2022 based on the Z-Score analysis method?"

## 1.2. Research Objectives

The objective aimed to be achieved in this research is "to predict the likelihood of bankruptcy for PT. Indofarma Tbk. for the period 2019 to 2022 using the Altman Z-Score model, which can be utilized to prevent issues before bankruptcy occurs."

## 3. Method

This research employs a descriptive-quantitative research design with two analysis methods: descriptive and quantitative. The descriptive method involves the researcher presenting the results of Altman Z-Score calculations in sentences that indicate whether PT. Indofarma Tbk. is in a healthy or unhealthy financial condition. Meanwhile, the quantitative method is utilized to measure numerical data from financial statements.

The variables used in this study are the ratios of the Altman Z-Score model (1968). The components of the Altman Z-Score model (1968) ratios include Net Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings Before Interest and Tax to Total Assets, Market Value of Equity to Book Value of Liabilities, and Sales to Total Assets. [8].

The Z-score analysis model by Altman (1968) is the first model to apply Multiple Discriminant Analysis (MDA). [8]. Multiple Discriminant Analysis can be used to differentiate population groups and as a classification criterion. Altman's discrimination analysis involves identifying various financial ratios and then developing them into a Z-score model to draw conclusions about events.

The financial variables or ratios used for Altman's discriminant analysis model are [6] :

a. Net Working Capital to Total Assets (WCTA)

This ratio indicates a company's ability to generate net working capital from its total assets. It is calculated by dividing net working capital by total assets. Net working capital is obtained by subtracting current liabilities from current assets. A negative net working capital is likely to face challenges in covering its short-term obligations due to insufficient current assets to meet these liabilities. Conversely, companies with a positive net working capital rarely encounter difficulties in meeting their obligations

$$.X1 : WCTA = \frac{\text{Working Capital}}{\text{Total Assets}}$$

b. Retained Earnings to Total Assets (RETA)

This ratio reflects a company's ability to generate retained earnings from its total assets. Retained earnings are profits that are not distributed to shareholders. In other words, retained earnings indicate how much of the company's income is not paid out as dividends to shareholders. Retained earnings represent a claim on assets, not assets per equity of shareholders. Retained earnings occur because common shareholders allow the company to reinvest undistributed profits as dividends. Therefore, retained earnings reported on the balance sheet do not constitute cash and are 'unavailable' for dividend or other payments.

$$\mathbf{X2 : RETA} = \frac{\mathbf{Retained Earnings}}{\mathbf{Total Assets}}$$

c. Earning Before Interest and Tax to Total Assets (EBITTA)

This ratio indicates the company's ability to generate profit from its assets before interest and taxes are paid. The formula for the ratio is as follows:

$$\mathbf{X3 : EBITTA} = \frac{\mathbf{EBIT}}{\mathbf{Total Assets}}$$

d. Market Value of Equity to Book Value of Debt (MVEBVL)

This ratio indicates the company's ability to meet obligations from its own market value of equity (common stock). The market value of equity is obtained by multiplying the number of outstanding common shares by the market price per common share. The book value of debt is obtained by summing current liabilities with long-term liabilities.

$$\mathbf{X4 : MVEBVL} = \frac{\mathbf{Market Value of Equity}}{\mathbf{Book Value of Debt}}$$

e. Sales to Total Assets

This ratio indicates whether the company generates sufficient business volume compared to its investment in total assets. The ratio reflects management efficiency in using the company's total assets to generate sales and profit. The formula for the ratio is as follows:

$$\mathbf{X5 : STA} = \frac{\mathbf{Sales}}{\mathbf{total Assets}}$$

After conducting research on the selected variables and samples, Altman produced the first bankruptcy model. Bankruptcy equations aimed at predicting a public manufacturing company. The equation of the first Altman model is [5] :

$$\mathbf{Z} = \mathbf{1,2 (WCTA)} + \mathbf{1,4 (RETA)} + \mathbf{3,3 (EBITTA)} + \mathbf{0,6 (MVEBVL)} + \mathbf{1 (STA)}$$

Information :

Z = Bankruptcy Index

X1 = Working Capital / Total Asset

X2 = Retained Earnings / Total Asset

X3 = Earnings Before Interest and Taxes/Total Asset

X4 = Market Value of Equity / Book Value of Total Debt

X5 = Sales / Total Assets.

The Z value is the overall index of the multiple discriminant analysis function. According to Altman, there are z-value cut-off numbers that can explain whether a company will experience failure or not in the future and he divides them into three categories, namely:

- a. If the Z value < 1.8 then it is a bankrupt company.
- b. If the value is 1.8 < Z < 2.99 then it is in the gray area (it cannot be determined whether the company is healthy or experiencing bankruptcy). Jika nilai Z > 2,99 maka Perusahaan dalam kondisi sehat.

So that this research can be carried out as expected, it is necessary to understand the various elements that form the basis of scientific research which are contained in the operationalization of research variables. In this research, the variable used is the Altman Z-Score method to analyze financial distress at PT Indofarma Tbk.



No.	Variable	Measurement	Literatur
1,	Altman Z-Score	$Z = 1,2 (WCTA) + 1,4 (RETA) + 3,3 (EBITTA) + 0,6 (MVEBVL) + 1 (STA)$	Endri, 2009

#### 4. Results and Discussion /Hasil dan Pembahasan

Data for Financial Distress Prediction Calculation, Altman Z Score Method

PT Indofarma Tbk 2019-2022

Year	WCTA (X1)	RETA (X2)	EBITTA (X3)	MVEBVD (X4)	STA (X5)	Z-Score	Category
2019	0,280	(0,057)	0,036	0,574	0,982	1,701	Bankrupt
2020	0,173	(0,087)	0,033	0,335	1,001	1,395	Bankrupt
2021	0,182	(0,093)	0,025	0,338	1,442	1,815	Grey Area
2022	(0,079)	(0,401)	(0,312)	0,059	0,754	(0,896)	Bankrupt

Source: Processed Data, 2023.

Based on the above calculations, with a Cut Off  $Z' < 1.81$ , the company falls into the bankruptcy category. If  $Z'$  is between 1.81 and 2.99, it is considered in the grey area, meaning the company cannot be definitively categorized as either bankrupt or healthy. If  $Z' > 2.99$ , the company is classified as healthy. Therefore, in the years 2019-2020, the company is categorized as bankrupt.

In 2021, the company successfully entered the Grey Area. The reason for the company being in the Grey Area is that all variable X experienced an increase. However, in 2022, the company returned to the bankrupt category, indicating that despite the company's efforts to manage all financial elements to function more effectively, it still remains in a vulnerable position. In 2022, the company experienced distress with a decrease in the Z-score to -0.896.

The predominant decrease was observed in variable X4, indicating that the company was ineffective in meeting its obligations.

## 5. Conclusion

Based on the results of the analysis and discussion, it can be concluded that PT Indofarma Tbk is categorized under financial distress and has the potential for bankruptcy. The calculations using the Altman Z-Score method show values below 1.81 in the years 2019-2020. However, in 2021, the company managed to recover from the brink of bankruptcy with a Z-Score of 1.81, placing it in the grey area category. Nevertheless, in 2022, the company faced bankruptcy once again. This occurred due to the high total liabilities that were not proportional to asset management, and the working capital management by PT Indofarma Tbk was not optimal as indicated by negative figures.

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