
**BANKRUPTCY PREDICTION FOR COMPANIES USING THE ALTMAN Z-SCORE
MODEL (A CASE STUDY IN LEASING COMPANIES IN THE INDONESIAN
STOCK EXCHANGE PERIOD 2019-2021)**

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ABSTRACT

Using the Altman Z-Score model, this study aimed to determine which leasing companies on the IDX are predicted to go bankrupt between 2019 and 2021. This research utilized descriptive research. Samples were collected using the nonprobability sampling technique. Based on the predetermined criteria, 14 financing companies were acquired as the study samples. The method employed was the Altman Z-Score model. The study results from 2019-2021 showed ten financing companies in healthy condition, one company is predicted to be in a grey area, and two companies are predicted for bankrupt. One company was predicted in a grey area in 2019 and entered a healthy condition from 2020-2021.

Keywords: financial management, financial reports, financial ratios, bankruptcy, model
Altman Z-Score.

JEL Classification: M40, M41, M49

Article info:

Received 20 December 2022

Revised 27 December 2022

Accepted 11 January 2023

Available online 12 Januari 2023

1. INTRODUCTION

Poor financial management will result in financial issues for the company, which does not preclude bankruptcy in the long term. In order to avoid bankruptcy, leasing companies that list their securities on the Indonesian Stock Exchange (IDX) must avoid financial difficulties. The Financial Services Authority (OJK) can work withdraw the licences of finance companies that experience bankruptcy and suppose this occurs; the stock exchange can delist the company's shares.

The bankruptcy of a company can be forecasted through bankruptcy analysis. The objective is to gather information on company bankruptcy to take preventative steps. The early bankruptcy indicators are detected, and management should take corrective measures as preventive measures (Rudianto, 2013:251).

In 1968, Edward I. Altman was one of the earliest scholars to study the use of financial ratio analysis to forecast business failure. The advantage of the Altman model of bankruptcy analysis is that this study incorporates all of the required financial report data and the usually employed core of financial statement analysis (Putra, 2010).



Altman's researchers developed several Z-Score formulas for companies with different conditions (Rudianto, 2013:254). The final formula is highly adaptable since it can be applied to various corporate business fields, both for the public and those that do not and is appropriate for usage in developing countries such as Indonesia (Rudianto, 2013:254).

The writer is interested in studying the bankruptcy prediction of financial organizations whose shares are actively traded on the capital market using the Altman Z-Score model for three years using the most recent Altman formula. Therefore, the title of this paper is "Bankruptcy Prediction for Companies Using the Altman Z-Score (A Case Study of Finance Companies on the Indonesian Stock Exchange in 2019-2021)."

2. LITERATURE REVIEW

2.1 Signalling Theory

The signalling theory describes how management uses signalling to eliminate information asymmetry (Lo, 2012). The corporation possesses more information about itself than the general public. The signal theory highlights the significance of industry-issued data on the investment decisions of parties outside the industry (Kuncorowati et al., 2021).

Leasing companies rely heavily on debt financing. If the debt ratio to total assets is excessive, it does not rule out the chance that the company may have trouble paying its debts. This will send the wrong message to creditors, as the more the debt, the greater the likelihood that the company will not be able to pay its bills when they are due, resulting in bankruptcy (Kartika et al., 2020).

2.2 Financial Management

Financial management is a combination of science and art that discusses, examines, and analyzes how a financial manager uses all company resources to search, manage, and distribute funds to give profit or prosperity for the shareholders and the company's continuity (Fahmi, 2015:2). There are several financial management objectives, i.e., maximizing company values, maintaining financial stability in a controlled situation, and minimizing current and future company risks (Fahmi, 2015:4).

2.3 Financial Reports

The financial condition of a corporation at a specific time or within a specified period is depicted in financial reports (Kashmir, 2019:66). The financial statements display the company's current financial condition to demonstrate the company's current financial condition (Kashmir, 2019:66).

2.4 Financial Ratios

Financial ratios are a comparative analysis of the quantities in financial statements using representative formulas (Fahmi, 2015:49). Financial ratios represent the financial strength of a corporation (Kadim et al., 2019). Financial ratios measure a company's financial health and performance (Kasmir, 2019:93). The company's health will be determined by the outcomes of these financial ratios (Kasmir, 2019:93).

2.5 Bankruptcy

Bankruptcy occurs when a corporation has insufficient finances to operate its business (Kadim et al., 2019). The start of bankruptcy is marked by several factors, i.e., continuous operational loss, non-performing loans, poor capital management, and other reasons causing the company termination due to financial issues (Irfani, 2020:247). When a company's debts surpass the value of its total assets, it declares bankruptcy (Rudianto, 2013:251).

Bankruptcy is the company's failure to run operations to achieve its goals (Rudianto, 2013:251). Economic failure means that the company revenue cannot cover the costs, while financial failure means that the company cannot fulfil its liabilities, although its total assets exceed the total liabilities (Rudianto, 2013: 251).

There are three types of corporate failure, namely: (Rudianto, 2013:252)

1. A company is technically insolvent if it fails to fulfil its due liabilities while the asset value is higher than the liabilities.
2. A company is legally insolvent if the asset value is lower than the liabilities.
3. A company is bankrupt if it fails to pay the loans and is declared bankrupt by the court.

2.6 Model Altman Z-Score

The Z-Score analysis is a technique for predicting a company's survival by combining many popular financial ratios and assigning each one varying weights (Rudianto, 2013:254). With the Z-Score approach, a company's likelihood of bankruptcy can be forecasted (Rudianto, 2013:254).

In 1968, Altman developed the first Z-score formula (Rudianto, 2013:254). Edward I. Altman of New York University was among the earliest researchers to examine the use of financial ratio analysis to forecast business bankruptcy (Rudianto, 2013:254). Altman's study resulted in the Z-Score formula, a ratio model that employs Multiple Discriminate Analysis (MDA) in which multiple financial ratios are required to construct a comprehensive model (Rudianto, 2013:254). The final discriminant function forecasts firm bankruptcy based on the financial ratios employed as variables (Rudianto, 2013:254).

Several formulas were derived from Altman's research results. Here are some Altman Z-Score models;

Model 1 Altman Z-Score of 1968: a public manufacturing business. This formula is derived from research on numerous United States manufacturing companies whose shares trade on the stock exchange (Rudianto, 2013:254).

Rumus:
$$Z = 1,2 X1 + 1,4 X2 + 3,3 X3 + 0,6 X4 + 1,0 X5$$

Financial Ratio:

X1 = Working Capital/Total Assets

X2 = Retained Earnings/Total Assets

X3 = Earning Before Interest and Tax (EBIT)/Total Assets

X4 = Stock Market Value/Total Liability

X5 = Sales/Total Assets

The score serves as an evaluation, specifically as follows:

- $Z > 2,99$ = Safe area, indicating the company is in good condition
 $1,81 < Z < 2,99$ = a grey area, which indicating the company is in a precarious condition.
 $Z < 1,81$ = Danger area, indicating the company is bankrupt.

Model 2 Altman Z-Score 1984: non-public traded manufacturing enterprises. Altman researched numerous nations utilizing non-public manufacturing enterprises (Rudianto, 2013:256).

Rumus:
$$Z = 0,717 X1 + 0,847 X2 + 3,107 X3 + 0,420 X4 + 0,998 X5$$

Financial Ratio:

X1 = Working Capital/Total Assets

X2 = Retained Earnings/Total Assets



X3 = Earning Before Interest and Tax (EBIT)/Total Assets

X4 = Book Value of Equity/Total Liability

X5 = Sales/Total Assets

The score serves as an evaluation, specifically as follows:

$Z > 2,9$ = Safe area, indicating the company is in good condition
 $1,23 < Z < 2,9$ = a grey area, which indicates the company is in a precarious condition.
 $Z < 1,23$ = Danger area, indicating the company is bankrupt.

Model 3 Altman Z-Score in 1995: all companies, whether they were going public or not. Altman performed a study on non-manufacturing enterprises, both those that went public and those that did not (Rudianto, 2013:257).

The final formula is highly adaptable because it can be applied to a variety of corporate business fields, both those that go public and those that do not, and is appropriate for usage in developing nations such as Indonesia (IAI, 2015:34).

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

Financial Ratio:

X1 = Net Working Capital/Total Assets

X2 = Retained Earnings/Total Assets

X3 = Earning Before Interest and Tax (EBIT)/Total Assets

X4 = Book Value of Equity/Total Liabilities

The score serves as an evaluation, specifically as follows:

$Z > 2,6$ = Safe area, indicating the company is in good condition
 $1,1 < Z < 2,6$ = a gray area, which indicated the company is in a precarious condition.
 $Z < 1,1$ = Danger area, indicating the company is bankrupt.

3. RESEARCH METHOD

3.1 Data

This research falls under the category of descriptive research. Quantitative data, specific data in the form of figures from annual or financial reports of the company, are utilized, and documentation is the data collection approach used in this investigation. The annual reports and financial statements of the leasing company listed on the IDX for 2019, 2020 and 2021 were obtained from www.idx.co.id and the company's website.

3.2 Sample

This study employed a non-probability sampling method known as purposive sampling. Purposeful sampling is a sampling strategy based on particular considerations or criteria (Sujarweni, 2016:7). This study's sampling criteria includes 14 leasing companies based on the defined criteria.

3.3 Method of Analysis

This study uses the Altman Z-Score model analysis approach to predict company bankruptcy by assessing its ratios. These are the steps involved in data analysis:

1. Calculate X1; net working capital to total assets

$$\text{Net Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

$$\text{Formula: } X1 = \frac{\text{Net Working Capital}}{\text{Total Assets}}$$

2. Calculate X2; retained earnings to total assets
3. Calculate X3; earnings before interest and taxes to total assets
4. Calculate X4; book value of equity to total liabilities
5. Calculate Z-Score using The Altman formula (1984);

$$\text{Formula: } Z = 6,56 X1 + 3,26 X2 + 6,72 X3 + 1,05 X4$$

6. Conduct an evaluation using the following criteria:
 - a) $Z > 2,6$ = Safe area, indicating the company is in good condition
 - b) $1,1 < Z < 2,6$ = a gray area, which indicated the company is in a precarious condition.
 - c) $Z < 1,1$ = Danger area, indicating the company is bankrupt.

4. RESULTS AND DISCUSSION

The prediction results of 14 finance companies on the IDX for 2019-2021 based on the Altman Z-Score model are presented in the table below.

Table 1 Prediction Results of 14 Finance Companies on the IDX in 2019-2021

Tahun	Z-Score	Prediksi
ADMF		
2019	3,54	Health
2020	3,87	Health
2021	5,35	Health
BFI		
2019	4,07	Health
2020	5,39	Health
2021	6,05	Health
CFIN		
2019	4,71	Health
2020	4,98	Health
2021	8,06	Health
WOMF		
2019	2,42	Grey Area
2020	2,79	Health
2021	2,96	Health
MFIN		
2019	6,39	Health
2020	7,09	Health
2021	6,93	Health
TIFA		

Tahun	Z-Score	Prediksi
2019	4,50	Health
2020	4,47	Health
2021	8,50	Health
TRUS		
2019	18,67	Health
2020	22,89	Health
2021	23,31	Health
BBLD		
2019	2,97	Health
2020	3,52	Health
2021	4,10	Health
HDFA		
2019	2,68	Health
2020	2,81	Health
2021	3,24	Health
DEFI		
2019	84,87	Health
2020	156,40	Health
2021	105,79	Health
POLA		
2019	17,41	Health
2020	37,48	Health
2021	68,77	Health
IMJS		
2019	-0,01	Bankrupt
2020	-0,04	Bankrupt
2021	-0,14	Bankrupt
VRNA		
2019	2,38	Grey Area
2020	2,02	Grey Area
2021	2,28	Grey Area
IBFN		
2019	-2,51	Bankrupt
2020	-13,72	Bankrupt
2021	-18,21	Bankrupt

Source: Data Processed 2022

The prediction results are based on the Altman Z-Score model criteria in table 1; the 2019-2021 leasing companies have excellent or non-bankrupt prediction outcomes; there are ten leasing companies. Adira Dinamika Multi Finance, BFI Finance Indonesia, Clipan Finance Indonesia, Mandala Multi Finance, KDB Tifa Finance, Trust Finance Indonesia, Buana Finance, Radana Bhaskara Finance, Danasupra Erapasific, and Pool Advista Finance are among these businesses.

The grey area requirements include leasing companies with predictive outcomes for 2019-2021; there is one leasing company, namely Verena Multi Finance. Wahana Ottomitra Multiartha is the leasing company for 2019 featured in the grey area. The corporation then provides optimistic projections for 2020-2021. From 2019 to 2021, the bankruptcy criteria comprised two leasing companies, namely Indomobil Multi Jasa and Intan Baru Prana, exhibiting predictive results.

The findings of this calculation are good signals for financial companies. In addition, it is a good signal for prospective purchasers of firm shares on the capital market. The company provides external parties information in the form of signals to assist them in making decisions regarding the reinvestment of several funds to support the company's growth and sustainability.

5. CONCLUSION

Prediction results used the Altman Z-Score model from 2019-2021, 10 companies included Adira Dinamika Multi Finance, BFI Finance Indonesia, Clipan Finance Indonesia, Mandala Multi Finance, KDB Tifa Finance, Trust Finance Indonesia, Buana Finance, Radana Bhaskara Finance, Danasupra Erapasific, and Pool Advista Finance, are in healthy condition. Verena Multi Finance predicted in the grey area. Indomobil Multi Jasa and Intan Baru Prana will go bankrupt. The Wahana Ottomitra Multiartha firm is anticipated to enter a grey area in 2019, followed by health conditions in 2020-2021.

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