



Is the Altman Z-Score Method Still Relevant in Predicting Bankruptcy? A Study on PT. Estika Tata Tiara Tbk from 2019-2021

Regita Miyandini^{1*}, Ruth Angelin Sirait², Yogi Pangestu³, Levina Chen⁴

^{1,2,3} Accounting, Universitas Muhammadiyah Riau

⁴ Interdisciplinary Program of Management, National Chi Nan University, Taiwan

ARTICLE INFO

Article history:

Received: 30 May 2023

Accepted: 30 May 2023

Published: 31 May 2023

Keywords:

Bankruptcy,
Altman Z-Score,
Ratio Analysis

ABSTRACT

The purpose of this study is to examine how much the level of bankruptcy at PT Estika Tata Tiara Tbk in 2019 - 2021, the objects to be tested in this study focus more on the elements in the income statement and statement of financial position. This research uses descriptive research with secondary information obtained from the Annual Report of PT Estika Tata Tiara Tbk. The results of the research from 2019 - 2021 obtained results in 2019 Z Score of 1.81 in 2020 Z score of -7.62 and in 2021 obtained a Z Score of -7.47 which means that the company is predicted to go bankrupt.

1. INTRODUCTION

Every company aims to achieve sustainable profits in order to grow and develop. Therefore, companies strive to avoid loss conditions that could lead to bankruptcy and hinder their growth. To prevent this, companies need to analyze their financial statements to determine their financial health. The income statement, in particular, provides information about the company's financial performance in a specific period, reflecting its short-term and long-term financial status and guiding investor decisions for investment purposes.

However, not all companies generate profits. Some companies experience bankruptcy or losses in their business operations. It is necessary to analyze financial statements to identify potential issues early on and make informed decisions regarding the company's sustainability. From 2019 to 2020, PT. Estika Tata Tiara reported a sharp decrease in revenue by IDR 21.75 billion or a decline of 82.35% compared to the previous year's revenue of IDR 123.28 billion. This situation is not exclusive to PT. Estika Tata Tiara but is a result of the COVID-19 pandemic, which has affected various aspects of human life. Many companies have suffered significant losses, and the national economy has been negatively impacted.

Corresponding Author.

*Email: regitamiyandini02@gmail.com



Therefore, this research aims to analyze the bankruptcy prediction using the Altman Z-Score method on PT. Estika Tata Tiara Tbk from 2019 to 2021 to determine whether the company is healthy or at risk of bankruptcy due to the COVID-19 pandemic. The Altman Z-Score is a bankruptcy prediction model developed by Edward Altman, a professor from the Leonard N. Stern School of Business, New York University. This method uses financial ratios to measure a company's financial health over a specific period and categorizes the results into Z-Scores.

2. THEORETICAL FOUNDATION

The theoretical foundation of the Altman Z-Score method is based on the belief that financial ratios have a close relationship with the likelihood of bankruptcy and can be used as early indicators to identify high-risk companies. This method utilizes four financial ratios: Net Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings Before Interest and Tax to Total Assets, and Total Equity to Total Debt Ratio. Each ratio is assigned a different weight in the Z-Score calculation. The Z-Score results are then categorized into four groups representing different bankruptcy risk levels. A Z-Score above 2.99 indicates a low bankruptcy risk, a Z-Score between 1.81 and 2.99 indicates that the company is in a gray area, while a Z-Score below 1.81 indicates a high risk of bankruptcy. The Altman Z-Score is expressed in the form of a linear equation consisting of four coefficients (X) representing the financial ratios. The formula is as follows (Altman, 1968):

$$Z = 6.5X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

Where:

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

$$X2 = \frac{\text{Retained Earnings}}{\text{Total Assets}}$$

$$X3 = \frac{\text{EBIT}}{\text{Total Assets}}$$

$$X4 = \frac{\text{Net Worth}}{\text{Total Liabilities}}$$

Ratio X1 is used to determine the extent to which a company's assets are utilized to generate profits in its business operations. X1 can be an important indicator to assess how effectively a company utilizes its assets to generate profits. Ratio X2 (Retained Earnings to Total Assets) aims to assess the likelihood of bankruptcy by reflecting the company's ability to generate profits from its assets. It provides insights into financial management issues that may lead to bankruptcy. Ratio X3 (Earnings Before Interest and Tax to Total Assets) indicates the company's ability to generate earnings from its assets before tax and interest payments. Ratio X4 (Net Worth to Total Liabilities) assesses the company's ability to fulfill its liabilities. It is crucial for financial analysis to observe and understand the market value of equity and total liabilities in assessing bankruptcy risk.

3. RESEARCH METHOD

The research approach used in this study is a descriptive approach. The research was conducted at PT. Estika Tata Tiara Tbk, a company in the livestock industry that provides various processed halal beef products under the brands Kibif, Boss, Kipao, and Murato. The secondary data used in this study is quantitative data, in the form of numerical figures presented in financial reports, which will support the variables under investigation. The data was obtained from the Indonesia Stock Exchange website. To analyze the data, calculations and explorations were performed on the financial reports as the analytical material (Azmi et al., 2018). Once the data is collected, it will be analyzed using the Altman formula proposed to predict bankruptcy potential. The standard measurement in predicting bankruptcy using the Altman Z-Score method is as follows: if Z-Score < 1.81, it is categorized as potentially bankrupt; if 1.81 < Z-Score < 2.99, it is categorized as the grey area; and if Z-Score > 2.99, it is categorized as not potentially bankrupt or in a healthy condition.

4. RESULTS

Net Working Capital to Total Asset (X₁)

In 2019, the net working capital to total asset ratio was 0.088, indicating that the company had good capabilities in managing available funds and resources to maintain optimal operations and generate consistent profits through effective and efficient asset and liability management. In 2020, the net working capital to total asset ratio was -0.251, indicating that the company experienced an inability to generate sufficient funds to support its short-term operations and business, particularly in maintaining adequate working capital. In 2021, the net

working capital to total asset ratio was 0.691, indicating that the company incurred losses and did not have sufficient capabilities to meet its current obligations with the available current assets. The calculations for net working capital are as follows:

Table 1. Net Working Capital Calculation

YEAR	NET WORKING CAPITAL	TOTAL ASSETS	$X_1 = \frac{\text{NET WORKING CAPITAL}}{\text{TOTAL ASSETS}}$
2019	80.152.229.932	905.821.030.739	0,088
2020	-169.882.377.082	677.803.886.415	-0,251
2021	-416.741.999.520	673.480.916.520	-0,619

Retained Earnings to Total Asset (X2)

In 2019, Retained Earnings to Total Asset (X2) indicates that the company was able to achieve good financial performance by effectively and efficiently allocating its resources and meeting the needs of stakeholders by providing significant value-added. Therefore, the company was able to sustain its business and achieve its targeted goals in the future. In 2020, Retained Earnings to Total Asset (X2) is an indicator that shows the company's current performance in utilizing its assets inefficiently and ineffectively in generating significant income and increasing the market value of the company. Therefore, an evaluation of the implemented business strategies is necessary. In 2021, Retained Earnings to Total Asset (X2) indicates that the company incurred losses in managing its assets within a specific period, thereby reducing the company's equity value. This could be due to a decrease in revenue, an increase in operational costs not offset by revenue growth, or even mistakes in the company's management strategy.

Table 2. Retained Earnings to Total Asset Calculation

YEAR	RETAINED EARNINGS	TOTAL ASSETS	$X_2 = \frac{\text{RETAINED EARNINGS}}{\text{TOTAL ASSETS}}$
2019	35.224.933.047	905.821.030.739	0,039
2020	-350.736.124.757	677.803.886.415	-0,517
2021	-181.441.958.103	673.480.916.520	-0,269

Earnings Before Tax to Total Asset (X3)

In 2019, Earnings Before Tax to Total Asset (X3) shows that the company has successfully managed its assets efficiently and generated adequate profits before taxes. This result indicates good financial performance of the company as the figure of 0.059 falls within the range considered healthy and demonstrates sufficient capabilities to support the company's future business growth. In 2020, Earnings Before Tax to Total Asset (X3) shows a significant decrease in pre-tax earnings with -0.640. In this case, effective efforts are needed in financial management systems, as well as socialization and education for the public regarding the products or services obtained. In 2021, Earnings Before Tax to Total Asset (X3) yields a result of -0.344, reflecting unfavorable financial conditions where the company experiences significant losses before considering tax obligations. This poses a challenge for

the company in generating sufficient income to balance operational costs and achieve positive net profits.

Table 3. Earnings Before Tax to Total Asset Calculation

YEAR	EBIT	TOTAL ASSETS	$X_3 = \frac{\text{EBIT}}{\text{TOTAL ASSETS}}$
2019	50.892.681.741	905.821.030.739	0,059
2020	-433.575.396.176	677.803.886.415	-0,640
2021	-231.701.036.945	673.480.916.520	-0,344

Total Equity to Total Debt Ratio (X4)

In 2019, the Total Equity to Total Debt Ratio (X4) indicates that the company has a relatively high level of financial independence. This means that the company has 0.688 units of equity for every unit of debt it holds, indicating that a significant portion of the company's financing comes from its owned equity, while the proportion of debt is relatively lower. It implies that the company has a strong ability to fulfill its financial obligations using internal resources such as retained earnings or equity capital. In 2020, the Total Equity to Total Debt Ratio (X4) indicates that the company has a low level of financial independence. The company has only 0.011 units of equity for every unit of debt it holds. This indicates that a significant portion of the company's financing comes from external debt compared to internal resources such as equity capital or retained earnings. The company needs to pay attention to the risks associated with high levels of debt and implement appropriate strategies to increase the proportion of equity in its capital structure, which can enhance financial stability and gain the trust of creditors and investors. In 2021, the Total Equity to Total Debt Ratio (X4) shows an unfavorable imbalance in the company's financial structure. This condition requires immediate action to address serious financial risks and improve the financial health of the company. By taking appropriate steps and implementing sustainable financial strategies, the company can restore balance and build the trust of creditors and investors to achieve long-term financial stability.

Table 4. Total Equity to Total Debt Ratio Calculation

YEAR	TOTAL EQUITY	TOTAL DEBT	$X_4 = \frac{\text{Total EQUITY}}{\text{Total DEBT}}$
2019	369.683.812.938	536.683.217.801	0,688
2020	-7.249.209.521	670.554.676.894	0,011
2021	-174.360.149.220	847.841.149.220	-0,206

Modified Altman Z-Score Results for PT. Estika Tata Tiara for the period 2019-2021

Based on the results of the calculations of the four variables used in the Altman Z-Score method, the next step is to input the results into the equation model of the modified Altman Z-Score by multiplying the data results by the standard of each variable. The equation model and the results of the calculation based on the modified Z-Score are as follows:

$$Z = 6.56(X1) + 3.26(X2) + 6.72(X3) + 1.05(X4)$$

Explanation:

Z	= Overall Index
Z < 1.81	= Bankruptcy
1.81 < Z < 2.99	= Grey Area
Z > 2.99	= Not Bankrupt
X1	= Net Working Capital to Total Asset
X2	= Retained Earnings to Total Asset
X3	= Earnings Before Tax to Total Asset
X4	= Total Equity to Total Debt Ratio

The next step is to sum the multiplication results for each variable and find the predicted bankruptcy analysis result using the modified Altman Z-Score method.

**Table 5. Analysis Result using Modified Altman Z-Score Method
PT. Estika Tata Tiara for the Period 2019-2021**

YEAR	X ₁	X ₂	X ₃	X ₄	Z-Score	ANALYSIS RESULT
2019	0.577	0.127	0.396	0.722	1.82	Grey Area
2020	-1,646	-1.685	-4.300	0.011	-7.62	Bankruptcy
2021	-4.060	-0.873	-2.311	-0.216	-7.46	Bankruptcy

Based on the results of the modified Altman Z-Score calculations from 2019 to 2021 above, PT. Estika Tata Tiara is in the grey area in 2019 and experienced bankruptcy in 2020-2021 as its Z-Score values were below 1.1 or $Z < 1.1$, indicating bankruptcy. Based on Table 5, the Z-Score calculation for PT. Estika Tata Tiara shows that the highest Z-Score value is in 2019 at 1.82, primarily due to the highest value of the net working capital to total assets (X1) compared to 2020-2021. Retained earnings to total assets (X2) also has the highest value compared to 2020-2021, while earnings before tax to total assets (X3) and total equity to total debt ratio (X4) have the highest values from 2019-2021. In 2020, the Z-Score has the lowest value at -7.62, indicating that PT. Estika Tata Tiara is potentially bankrupt. This is seen from the lowest values of net working capital to total assets (X1), retained earnings to total assets (X2), and earnings before tax to total assets (X3) compared to 2019 and 2021. However, the total equity to total debt ratio (X4) is still considered low compared to 2019 and has a higher value than 2021. Thus, it can be stated that net working capital to total assets and total equity to total debt ratio have a significant influence on determining the Z-Score compared to other variables, and fluctuations in earnings do not affect the Z-Score or bankruptcy potential of a company.

5. CONCLUSION

The Z-Score financial analysis is used to measure the financial health of a company and provide an indication of bankruptcy risk. Based on the Z-Score results provided, which were 1.82 in 2019, -7.62 in 2020, and -7.46 in 2021, it can be concluded that the financial health of the company has significantly declined during that period.

In 2019, with a Z-Score value of 1.82, the company showed relatively good financial

health with a low risk of bankruptcy. However, in 2020 and 2021, there was a drastic decrease in the Z-Score values to -7.62 and -7.46, indicating highly unstable financial conditions and a high risk of bankruptcy. The sharp decline in the Z-Score values in the past two years indicates serious problems in the company's financial structure, primarily due to a decrease in sales resulting from the impact of COVID-19. In response to this situation, the company has taken decisive actions to address underlying financial issues and restore its financial health. Steps that can be taken include debt restructuring, cost control, revenue enhancement, product or market diversification, and seeking additional funding to alleviate financial pressures.

LIMITATION

The results of the bankruptcy analysis using the Z-Score method on PT. Estika Tata Tiara for the period 2019-2021, as discussed in the conclusion above, indicate that the company is experiencing unstable financial conditions and a high risk of bankruptcy due to declining sales, dwindling capital, and increasing liabilities caused by the impact of Covid-19. The implications drawn from this conclusion are as follows: (1) The company needs to make efforts to improve financial performance and reduce debt burden, (2) The company should implement restructuring and cost-saving strategies to minimize the risk of bankruptcy that could threaten business continuity, (3) Increase revenue through product and market development and enhance operational efficiency.

REFERENCES

- Azmi, Z., Nasution, A. A., Wardayani, I. M., Supriyanto, S. R., & Hidayat, R. (2019, November). Grounded Theory in Accounting Research. In ICASI 2019: Proceedings of The 2nd International Conference On Advance And Scientific Innovation, ICASI (Vol. 18, p. 449).
- Budy, Viva. (2022). Pemerintah Targetkan Ekonomi Indonesia Tumbuh 5,3 hingga 5,9% pada 2023. Databoks. <https://databoks.katadata.co.id/datapublish/2022/05/03/pemerintah-targetkan-ekonomi-indonesia-tumbuh-53-hingga-59-pada-2023>
- Rialdy, N. (2017). Analisis Kebangkrutan Dengan Menggunakan Metode Altman Z Score Pada PT. Adhi Karya (Persero) TBK. Jurnal Keuangan dan Bisnis Vo. 9, No. 2. 79-96
- Peter & Yoseph. 2011. Analisis Kebangkrutan Dengan Metode Z-Score Altman, Springate dan Zmijewski Pada PT. Indofood Sukses Makmur Tbk Periode 2005 – 2009. Akurat Jurnal Ilmiah Akuntansi Nomor 04 Tahun ke-2
- Purba, R., Nugroho, L., Santoso, A., Hasibuan, R., Munir, A., Suyati, S., Azmi, Z., & Supriadi, Y. (2023). Analisis Laporan Keuangan. Global Eksekutif Teknologi.
- Wahyu, T., & Hardana, A. (2022). Analisis Prediksi Kebangkrutan dengan Menggunakan Metode Altman Z-Score pada PT. Indofood Sukses Makmur, Tbk. Jurnal Ilmu Sosial dan Humaniora.
- Oktarina, E., (2017). Analisis Prediksi Kebangkrutan Dengan Metode Altman Z-Score Pada PT. BRI Syariah. Laporan.