International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Accuracy the Altman Method in Predicting Bankruptcy Of Property Companies

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Abstract

This study aims to calculate and analyse the level of financial difficulties experienced by the company using the Altman Z-Score method. The variable used in this study is the Altman Z-Score method which is proxied by the ratio of liquidity, leverage, profitability, effectiveness and market ratio. The samples used were 6 property companies listed on the Indonesia Stock Exchange from the 2019-2021 period. In this study, hypothesis testing used the Altman Z-score analysis method, with the help of the Microsoft Excel program and Statistical Package the Social Science (SPSS) VERSION 23.0. The results of testing the hypothesis of this study indicate that the altman z-Score model is very accurate in predicting company bankruptcy, further results show that the liquidity ratio, leverage, profitability, market ratio and activity determine the final value of altman z-score prediction. The third result shows that there are six companies that are in the grey area position during 2019-2021 and the rest are in a position of experiencing financial distress.

Keywords: Altman Z-score, bankruptcy , Financial Ratios, Property

INTRODUCTION

A company is an entity established by individuals or institutions with the main objective of maximising shareholder wealth (Watts, 2018). The company is an organisation that seeks profit as its main goal (Sponerova et al., 2021) although it does not rule out the possibility of expecting prosperity as another goal (Sajjan, 2016). From these two definitions, it can be concluded that a company is established (Diakomihalis, 2012) to have several objectives (Maudy & Tanjung, 2018), namely survival, growth and seeking profit (Sumolang et al., 2021).

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In connection with efforts to see adequate financial aspects and risks (Swalih et al., 2021) in the property industry, an indicator is needed to see the level of health and performance of the company (Skokou et al., 2021) which is used to make predictions whether a company has the potential to go bankrupt or not (Kablan, 2020). One way to see performance is by using financial ratios (Iqbal et al., 2019). Several studies have been conducted on the benefits of financial ratios to predict potential bankruptcy, for example:(Altman et al., 2017),(Hofman et al., 2015), (Almamy et al., 2016),(Mansournia et al., 2021). The results show that financial ratios are useful in assessing the health condition of the company, even useful in predicting company bankruptcy(Elliott et al., 2014).

Objectives

This article intends

1. Calculating the financial ratio score using altman z-score on property industry companies on the Indonesian stock exchange
2. Analyse the ratio of liquidity, leverage, profitability, activity and market ratios in industrial property companies on the Indonesian stock exchange.
3. Analyse the number of companies that have the potential to experience bankruptcy in the property industry on the Indonesian stock exchange.

The following is a picture of the framework in this study:

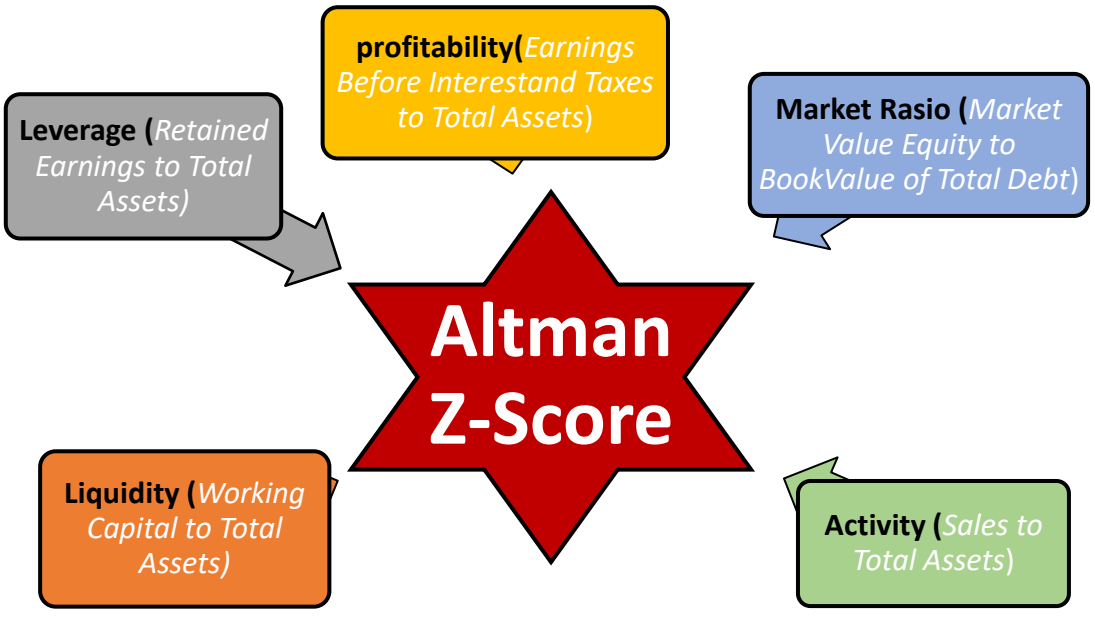


Figure 1: model of altman Z-Score

According to (Watts, 2018) In general, corporate financial ratios can be grouped

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into 4 (four) basic types:

1) Liquidity Ratio

Liquidity ratio is a ratio to measure the company's ability to meet obligations that must be paid immediately. Liquidity ratios are measured by Current Ratio (Ko et al., 2017), Quick ratio (Nosita & Jusman, 2019), Cash Ratio (Zakiyah & Windasari, 2020).

2) Solvency Ratio

Solvency ratio is to measure the company's ability to meet all obligations (Finishtya, 2019), both short-term and long-term obligations if the company is liquidated (Swalih et al., 2021). This ratio is often called the leverage ratio. The result is the lower the ratio the better(Herlin, 2018). Solvency ratio is measured by Total Debt to Total Assets and Total debt to Equity (Rim & Roy, 2014).

3) Profitability Ratio

Profitability ratio is a ratio to measure the company's ability to generate profits from the capital used(Doğan, 2018). This ratio is often also called the efficiency ratio (Mansournia et al., 2021). because it can be used to measure the efficient use of capital. The higher the ratio, the better (Elliott et al., 2014). Profitability ratios are measured by economic profitability, own capital profitability, profit margin, return on investment (ROI), return on assets (ROA) (Qiu et al., 2020).

4) Market Ratio

This ratio is a ratio that measures the company's ability to provide collateral to each debt through its own capital (Amelia Saputri & Krisnawati, 2020). Market value equity ratio here is the annual closing price times the total annual share. The capital referred to here is the combined capital of the market value of ordinary capital and preferred shares, while debt includes current debt long-term debt(Taffé, 2021).

5) Activity Ratio

Activity Ratio is a ratio to measure the efficiency and productivity of asset utilization (Karun & Puranik, 2021). The higher the activity ratio, the more productive the use of assets in generating sales. The activity ratio consists of several types, namely: Asset Turnover, Working Capital Turnover, Cash Turnover, Receivables Turnover, and Inventory Turnover(Rialdy, 2018).

6) Altman Z-Score Model

$$\textit{Z-Score} = 0{,}717X1 + 0{,}847X2 + 3{,}107X3 + 0{,}420X4 + 0{,}998X5$$

Description:

X1 = Working Capital to Total Assets.

X2 = Retained Earnings to Total Assets.

X3 = Earnings Before Interest and Taxes to Total Assets.

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X4 = Market value of equity to book value of debt.
X5 = Sales to total assets.(Sponerova et al., 2021)

The type of research used in this research is quantitative research. With the aim of explaining the company's bankruptcy analysis model, namely the Altman Z-Score model in predicting the level of bankruptcy in property industry companies. The population is all property companies listed on the Indonesia stock exchange, and a sample of 6 companies selected based on purposive sampling criteria.

Discussion

The results of this study are in the form of a detailed explanation of the calculations consisting of six property industry companies for the 2019-2021 period studied based on the Altman Z-Score bankruptcy model.

Table 1. Altman's Z-Score analysis results Property industry

No	Company Name	Z-Score					
		2019	status	2020	status	2021	status
1	Jaya real property	0,982	bankruptcy	0,986	bankruptcy	0,935	bankruptcy
2	Duta pertiwi	0,792	bankruptcy	1,266	Grey Area	1,339	Grey Area
3	Gowa makasar development	0,437	bankruptcy	0,866	bankruptcy	1,006	bankruptcy
4	Ciputra surya	1,799	Grey Area	1,071	bankruptcy	0,954	bankruptcy
5	Indonesia prima property	0,122	bankruptcy	1,389	Grey Area	1,809	Grey Area
6	Bakriland development	1,272	Grey Area	0,779	bankruptcy	0,703	bankruptcy

(Source : research data; processed)

From the calculation of table 1, it shows that the property industry in 2019 is in a bankrupt position of 4 companies (< 1.20) and a gray area of 2 companies (1.20 < Z

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< 2.90). PT Ciputra Surya and PT Bakriland Development are in the gray area position and four other companies have the potential to go bankrupt. Meanwhile, in 2020 it can be seen that the condition of the company is in the gray area position of 2 companies and 4 others have the potential to go bankrupt. PT Duta Pertiwi and PT Indonesia Prima Property are in the gray area position (1.20 < Z < 2.90) with Z-Score values of 1.266 and 1.389 respectively, while the other four companies are in the position of potential bankruptcy. Meanwhile, in 2021 the results of the analysis show that the condition of the company is in a gray area position with 2 companies and 4 potentially bankrupt. PT Duta Pertiwi and PT Indonesia Prima Property are in the gray area position (1.20 < Z < 2.90) with values of 1.339 and 1.809 respectively, while the other four companies are in a position of potential bankruptcy. As for the category of healthy companies with a Z-score value ≥ 2.90, there are none.

This research is in line with (Sponerova et al., 2021), (Diakomihalis, 2012) research which states that altman can be used to calculate and analyze the company's potential for bankruptcy.

Table 2 liquidity ratio of property industry

No	Company	Liquidity		
		2019	2020	2021
1	Jaya real property	0,042	0,076	0,053
2	Duta pertiwi	0,184	0,230	0,266
3	Gowa makasar development	-0,172	-0,034	-0,049
4	Ciputra surya	0,437	0,176	0,137
5	Indonesia prima property	-0,466	-0,208	-0,118
6	Bakriland development	0,417	0,236	0,109

(Source : research data; processed)

Liquidity (Working capital to total asset ratio) is used to measure liquidity against total capitalization or to measure the company's ability to meet its immediate obligations / short-term obligations. In 2019 PT Indonesia Prima Property was listed as the least liquid company at -0.466, meaning that the company has low liquidity, the amount of current assets is smaller than the amount of current liabilities. So that it is not enough to cover these obligations. The same situation was also experienced by

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PT Gowa Makasar Development this year, which was recorded as a liquid company. In 2020 PT Gowa Makasar Development and PT Indonesia Prima Property are the companies with the lowest ratio with a negative value, which indicates that the company has the lowest liquidity level among other companies. This means that the amount of current assets is less than the amount of current liabilities. And in 2021 PT Gowa Makasar Development and PT Indonesia Prima Property is the company with the lowest ratio with a negative value which indicates that the company has the lowest liquidity level among other companies, meaning that the amount of current assets is less than the amount of current liabilities.

Table 3 leverage Rasio of industry property

No	Company	leverage		
		2019	2020	2021
1	Jaya real property	0,319	0,323	0,324
2	Duta pertiwi	0,194	0,295	0,337
3	Gowa makasar development	0,129	0,216	0,252
4	Ciputra surya	0,387	0,396	0,332
5	Indonesia prima property	-0,722	0,048	0,050
6	Bakriland development	0,008	0,035	0,056

(Source : research data; processed)

Leverage (Retained earning to total asset ratio) is used to measure cumulative profitability. The age of the company affects the ratio because the longer the company operates, the easier it is to accumulate retained earnings. This causes relatively young companies to generally show low ratio results, except for those whose profits were very large in the early days of their establishment. In 2019 PT Indonesia Prima Property had a negative leverage ratio, meaning that during that time the company never booked retained earnings or always accumulated retained losses. This indicates that the ability of its assets to obtain retained earnings is very low when compared to other companies, due to the income received not being able to cover the expenses that must be borne during the period more towards operating expenses and cost of goods sold. In 2020 PT Bakriland Development and PT Indonesia Prima Property in this year have the lowest leverage ratio, namely 0.035 and 0.048. And in 2021 PT

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Indonesia Prima Property and PT Bakriland Development have the lowest leverage ratios of 0.050 and 0.056 respectively, while PT Duta Pertiwi has the highest leverage ratio of 0.337.

Tabel 4 Profitability Rasio Of Property Industry

No	Company	profitability		
		2019	2020	2021
1	Jaya real property	0,079	0,093	0,097
2	Duta pertiwi	0,029	0,083	0,094
3	Gowa makasar development	0,040	0,092	0,120
4	Ciputra surya	0,128	0,048	0,068
5	Indonesia prima property	0,032	0,170	0,153
6	Bakriland development	0,041	0,013	0,006

(Source : research data; processed)

Profitability (Earning before interest and taxes ratio) measures the company's ability to generate profits from the assets used. The smaller the level of profitability means the more inefficient and ineffective the company uses all assets in generating operating profit and vice versa. In 2019 the company with the lowest profitability ratio was PT Duta Pertiwi Tbk of 0.029. This shows that management cannot manage its assets effectively. very low profitability is due to the company's profitability in this year experiencing losses where the operating profit achieved by the company shows that the company's operating costs are always greater than its gross profit, as a result the company cannot book its operating profit and loss. The company with the highest ratio is PT Ciputra Surya Tbk of 0.128. While in 2020 the company with the lowest profit ratio is PT Bakriland Development amounting to 0.013. While the company with the highest ratio is PT Indonesia Prima Property. And in 2021 the company with the lowest profit ratio is PT Bakriland Development of 0.006, while the company with the highest ratio is PT Indonesia Prima Property of 0.153.

Table 5. market ratio of industry property

No	Company	Market Ratio		
		2019	2020	2021
1	Jaya real property	0,383	0,320	0,244
2	Duta pertiwi	0,296	0,908	0,848

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3	Gowa makasar development	0,265	0,220	0,162
4	Ciputra surya	0,955	0,556	0,324
5	Indonesia prima property	1,612	1,131	2,129
6	Bakriland development	1,672	1,096	1,060

(Source : research data; processed)

Market value equity to book value total debt ratio is used to measure how much a company's assets can decline in value before the amount of debt is greater than its assets and the company becomes bankrupt. The capital in question is the combined market value of ordinary capital and preferred shares, while debt includes current debt and long-term debt. In 2019, the company with the lowest market ratio was PT Gowa Makasar Development at 0.265. This indicates that the company accumulates more debt than equity capital than other companies. When viewed from the company's own capital derived from paid-up capital in its shares, the company with the highest ratio is PT Bakriland Development. This means that the company accumulates lower debt to equity capital when compared to other companies. In 2020, the company with the lowest market ratio value is PT Gowa Makasar Development of 0.220, while the company with the highest ratio is PT Indonesia Prima Property. And in 2021 the company with the lowest market ratio is PT Gowa Makasar Development amounting to 0.162, while the company with the highest ratio is PT Indonesia Prima Property.

Table 6. activity ratio of industry property

No	company	aktivity		
		2019	2020	2021
1	Jaya real property	0,276	0,235	0,219
2	Duta pertiwi	0,282	0,213	0,215
3	Gowa makasar development	0,216	0,330	0,388
4	Ciputra surya	0,360	0,227	0,228
5	Indonesia prima property	0,292	0,495	0,483
6	Bakriland development	0,137	0,080	0,114

(Source : research data; processed)

The activity ratio (Sales to total asset ratio) measures management's ability to use assets to generate sales. In 2019 the company with the lowest activity ratio is PT Gowa Makasar Development, meaning that the company is indicated to be less

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effective in using assets to increase sales compared to other companies, and the highest ratio this year is PT Ciputra Surya. In 2020 the company with the lowest activity ratio is PT Bakriland Development, which is 0.080 while the highest ratio this year is PT Indonesia Prima Property. and in 2021 the company with the lowest activity ratio is PT Bakriland Development while the highest ratio value this year is PT Indonesia Prima Property.

This study supports several previous studies (Rim & Roy, 2014), (Doğan, 2018) and (Lord et al., 2020) which state that financial ratios can be used to assess the level of company bankruptcy.

CONCLUSION

1. The Altman Z-score method can be used to analyze bankruptcy in the property industry for 2019-2021 with the overall result that the tested companies are in a gray area position and have the potential for bankruptcy.
2. Liquidity, leverage, profitability, market and activity ratios strongly influence the bankruptcy prediction score.
3. there are 6 companies that are in the gray area position, namely for 2019 there are two companies, (PT Ciputra Surya and PT Bakriland Development), in 2020 there are two companies (PT Duta Pertiwi and PT Indonesia Prima Property), and in 2021 two companies (PT Duta Pertiwi and PT Indonesia Prima Property). while the remaining companies are in the category of potential bankruptcy.

Suggestions

1. Investors and creditors before investing their funds in a company need to predict whether the company has the potential to go bankrupt or not.
2. It is hoped that future studies can use other bankruptcy prediction methods To be used as a comparison in predicting bankruptcy.

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