

Analysis of Accuracy Level of Altman Z-Score Model and Springate Model in Measuring the Potential of Financial Distress in Plantations Industries

Mardaconsita*

Universitas Mercu Buana, Indonesia

Mochamad Soelton

Universitas Mercu Buana, Indonesia

Abstract

This study aimed to analyze the level of bankruptcy using Altman Z-Score model of modifications and models Springate, the Plantations Company period 2014-2017. The data used in this research is secondary data, financial data Plantations Company taken from the site www.idx.co.id. Based on the results of this study show that the model of the Altman Z-Score modification Plantations Industries was having financial difficulties which would be potentially bankrupt, it can be seen from the Z-Score of less than 1.1 in the period 2014-2017 and no different from using a model that generates value Springate S-Score <0.862 means that the financial performance Plantations company are experiencing financial difficulties during the 2014-2017 period and potentially going bankrupt.

Keywords: Altman Z-Score modification; Springate; The rate of bankruptcy.



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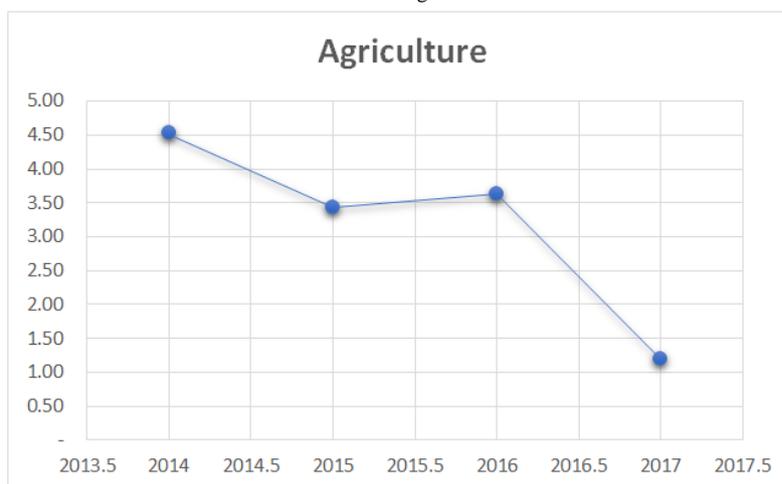
1. Introduction

The agricultural sector has a very strategic and important role in Indonesia. Aside from being a driver in national economic growth because it is the second largest contributor after the manufacturing industry to GDP (Gross Domestic Product), it is also the provider of basic commodities so that inflation remains under control and foreign exchange earners. As a driver of the people's economy, the role of agriculture is also a provider of employment for the community and the main source of income for farmers, during 2014-2017 the population working in the agricultural sector was around 38.3 million-42.5 million or around 31.7-37, 9 percent of the Indonesian workforce (Kariyasa and Ketut, 2017).

The importance of the agricultural sector can increase investor interest and prospective investors invest in the sector. However, uncertainty in investing in the stock market encourages investors to remain cautious in making decisions about the shares to be purchased in order to maximize returns that are combined with certain risks in each investment decision. Investors and prospective investors tend to see the value of the company to make a decision on the shares to be purchased (Hermuningsih, 2013).

Husnan and Suad (2012) state that what is meant by company value is the price that the prospective buyer is willing to pay if the company is sold. High corporate value will have an impact on market confidence, not only in the company's current performance but also to see the company's prospects in the future. Therefore, the company's main goal according to the theory of the company is to maximize the wealth or value of the company (Salvatore, 2011). Maximizing the value of the company is very important for the company, because maximizing the value of the company also means maximizing shareholder prosperity which is an important thing that must be achieved by company management (Brigham *et al.*, 2010).

The agricultural sector is considered an important sector in economic growth. This is evidenced by the high value of the company in the agricultural sector listed on the Indonesia Stock Exchange. Although quite high but fluctuating and even tends to have a downward trend in the period 2013-2017. Prastuti (2016) suggest that if the value of the company is unstable, the company will be considered a decline by investors. This certainly makes the company lose the trust of investors. Many investors will sell back the invested shares so that the company's capital is reduced and the difficulty of operating the company. The value of agricultural sector companies in 2014-2017 which is proxied by Price to Book Value (PBV) can be seen in Figure 1.1.

Figure-1.1. Corporate Value (PBV) of the Agriculture Sector listed on the Indonesia Stock Exchange in 2014-2017

Source: Indonesia Stock Exchange (2018) (processed)

Figure 1.1 shows the fluctuations in the value of agricultural sector companies. In 2014, the value of agricultural sector companies was 4.53. This value is the highest value during 2014 to 2017. After experiencing an increase in 2014, in 2015 the value of agricultural companies dropped to 3.44 and again increased in 2016. The last condition in 2017 the value of the company declined quite sharply from 3.64 in 2016 it decreased to 1.19.

The high and low value of the company can not be separated from various factors that influence it. Based on previous research, there are many factors that can influence the value of the company including liquidity, capital structure, profitability, asset effectiveness, sales growth and company size.

Liquidity has a positive effect on company value. The higher the ratio, the higher the company's ability to fulfill its obligations so that it is considered to have good prospects by investors. In the end it can increase stock prices, which means the value of the company also increases (Putra and Ngurah, 2016). This result is contrary to Yuliana (2016) which states that liquidity has a negative effect on company value because it indicates that there are many idle company funds that should be utilized. Unlike the case with Ramli and Soelton (2018), which states that liquidity does not affect the value of the company.

According to Nirmala (2016), capital structure has a negative effect on company value. If the company has less internal funds, then this will be responded negatively by investors so that the value of the company decreases. Tauke *et al.* (2017) also stated that the capital structure influences the value of the company but positively, increasing debt will increase the value of the company. As long as the company is able to balance the benefits and costs incurred due to debt, it is not a problem because it can still increase profit and initial return. In contrast to Sattar (2015) and Sumarto *et al.* (2018) which shows that the capital structure does not affect the value of the company because shareholders pay more attention to how the company produces profits.

Profitability affects the value of the company (Normayanti, 2017). These results are the same as the results of research conducted by Cahyanto (2014) and Mayogi (2016), profitability affects the value of the company because shareholders and investors see how the company uses its capital in carrying out its operations. High profits will greatly affect the views of investors regarding the financial performance of a company so that the value of the company also increases. This is contrary to the research of Kurniasari (2017) which states that profitability does not affect the value of the company. Meanwhile research conducted by Aggarwal and Divya (2017) states that profitability has a negative effect on company value.

The results of the Soelton and Tridyatno (2017), study show that asset effectiveness has a positive effect on company value. The higher the level of activity in the company, the greater the cash flow that the company receives means more effective in managing transaction activities in the company. Different from Sianturi (2015) which states that the activity ratio does not affect the value of the company. The size of the company has a positive effect on company value (Nirmala, 2016), large-scale companies show that the company has developed in its market share, so this will be responded positively by investors and have an impact on increasing the value of the company. In addition, companies with a larger size are more favored by investors because they are considered capable of prospering their shareholders (Sari, 2016). This is contrary to Utomo (2016) and Kausar *et al.* (2014) which states that company size has a negative effect on company value. In contrast to Suffah (2016) and Meidiawati (2016), the results of his research indicate that company size does not affect the value of the company.

Nirmala (2016), states that sales growth has a positive effect on company value. Investors will consider companies that can generate high profits because they can increase the company's sales. High sales growth will be able to increase the value of the company. While the results of Limbong (2016) and Mandalika (2016) research state that sales growth has no influence on company value. These results indicate that sales growth is not a focus because investors see sales growth as a non-final result because revenue is still reduced by operating costs.

Fanny and Saputra (2005), found that in 1998 about 80% of the 280 companies that went public could be categorized as bankruptcy because the assets of these companies were far below the nominal value of loans or foreign loans. This fact makes a lot of researchers do research on the extent to which bankruptcy can be predicted some time before the bankruptcy actually happened. One of the researchers who conducted this bankruptcy analysis

was Weston and Fred (1993) who stated that the company categorized as financial failure if the company is unable to pay its obligations at maturity even though the total assets exceed the total liabilities.

Clarifying the phenomena that occur above is good if we first know bankruptcy itself. Bankruptcy is usually interpreted as a failure of the company to run a company's operations to generate profits. Bankruptcy is also often called corporate liquidation or company closure or insolvency (Endri, 2009).

Bankruptcy as a failure is defined in several meanings (Adnan and dan Kurniasih, 2000), namely economic failure (financial failure) and financial failure (financial failure). Bankruptcy/failure of the company in the sense above makes investors and creditors feel worried about the state of the company.

Based on the incident, one of the plantation companies was affected by various problems being faced by the plantation sector, namely Plantations Company, one of the factors that indicates this is the decline in net income and losses experienced by Plantations Company, during the period 2014-2017.

Based on the phenomenon that is being experienced by Plantations Company where the financial statements being examined from 2014-2017 get negative results but stocks are still being traded, the selling price is still relatively stable. High stock prices make the value of the company also high, and increase market confidence not only in the company's current performance but also in the company's prospects in the future. Abdul Muid (2012), Company value is a condition that has been achieved by a company as an illustration of public trust in the company after going through an activity process for several years, that is, since the company was established until now. In addition, there are other considerations that make the writer choose Plantations Company as the object of research, which are all problems in the group company both lapindo mudflow problems, company tax arrears problems and some time recently regarding Group Life's inability to fulfill its obligations in paying claims for insurance holders, a little many will definitely affect performance another Group subsidiary, one of which is Plantations Company. All the problems that exist in the body of the group company greatly attract the attention of the author to analyze more deeply the financial performance of the group company through one of its subsidiaries, Based on the background above, the authors propose the following problems:

1. What is the prediction of the bankruptcy of the Altman Z-Score Modified model in the Plantations Company 2014-2017 Period?
2. What is the prediction of the Springate bankruptcy rate at Plantations Company 2014-2017 Period?

The purpose to be achieved in writing this essay is to analyze and predict the bankruptcy of Plantations Company using Altman Z-Score and Springate analysis.

2. Research Model

In this study the authors used descriptive research methods. According to Sugiyono (2015), descriptive research is research carried out to analyze data by describing or describing data that has been collected as it is without intending to make conclusions that apply to or generalize. In this study the analysis used is an analysis of the financial statements of Plantations Company. So this unit of analysis is called the company's analysis unit. Data collection techniques used in this study are based on existing objectives using secondary data in the form of financial statements from Plantations Company, which is in the form of profit and loss report and balance sheet report in 2014 until 2017. In addition, to obtain the data needed through the main activity, namely library research. Research activities are carried out by reading, studying, collecting and recording information from books, literature, articles, journals from the internet and other scientific and theoretical sources. At the library at the University of Mercu Buana.

The type of data used in this study is secondary data. Secondary data is historical data both presented and published by other parties. This type of research is quantitative, which obtains data in the form of numbers and analyzes data. In this study the method used is research to determine the influence of several independent variables where the independent variable in this study is Working Capital to Total Assets Ratio, Retained Earnings to Total Assets Ratio, Earning Before Interest and Taxes to Total Assets Ratio and Market or Book Value of Equity to Book Value of Total Liabilities in Altman Z "-Score. And in the Springate model method the overall index is A: Working capital against Total Assets, B: Profit Before Interest and Tax on Total Assets, C: Profit before Tax on Total Current Liabilities, D: Sales of Total Assets. While for the dependent variable is the prediction of financial distress contained in the financial statements of the company Plantations Company, 2014-2017 period.

Multiple Discriminant Analysis (MDA) is an analysis that aims to understand group differences (forecast differences) and predict the probability that an object of research (customers, employees, students, goods) will enter/become members of a particular group, based on several variables free metric. Groups (groups) are non-metric non-free variables. Discriminant analysis is appropriate if the non-free variable is nonmetric (in the form of groups, can be two groups (dichotomous, such as men - women, honest and dishonest customers, companies go bankrupt and do not go bankrupt) or more than two (multy dichotomous, like very rich, rich, not rich; customers are very honest, honest, dishonest, customers are very satisfied, satisfied, dissatisfied; heavy drinkers, light, not drinkers)). The researcher must look for a discriminant function which can distinguish which particular object into groups, based on many attributes or independent variables.

In this study using processing techniques with discriminant analysis of Altman and Springate models to analyze data and Z-Score, S-Score is used to predict the possibility of bankruptcy in the company.

The Altman discriminant function used is:

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

Where:

X1 = working capital/total assets

X2 = retained earnings/total assets

X3 = earning before interest and taxes/total assets

X4 = book value of equity/total liabilities

The Springate function used is:

$$S\text{-Score} = 1.03A + 3.07B + 0.66C + 0.4D$$

Where:

A = Working capital/total assets

B = Net profit before interest and taxes/total assets

C = Net profit before taxes/current liability

D = Sales/total assets

3. Results and Discussion

Table-1. Working Capital to Total Asset Ratio (X1)

Tahun	Current Assets	Current Liabilities	Net Working Capital	Total Assets	X1
2014	2.597.496.750	7.699.735.962	-5.102.239.212	17.450.389.476	-0,292
2015	1.473.246.391	7.965.667.450	-6.492.421.059	16.926.616.869	-0,384
2016	1.014.926.396	10.292.576.380	-9.277.649.984	14.700.318.360	-0,631
2017	1.471.147.000	11.830.333.000	-10.359.186.000	13.883.992.000	-0,746

X1 2014	=	-5,102,239, 212	=	-0.292
		17,450,389,476		

X1 2015	=	-6,492,421,059	=	-0.384
		16,926,616,869		
X1 2016	=	-9,277,649,984	=	-0.631
		14,700,318,360		

X1 2017	=	-10,359,186,000	=	-0.746
		13,883,992,000		

Year 2014

The value of X1 in 2014 was -0.292 obtained from working capital in 2014 amounting to -5.102,239,212 divided by total assets in 2014 amounting to 17,450,389,476 The value of X1 showed negative results because it was influenced by negative working capital and caused current assets of 2,597,496,750 smaller than Current liabilities amounted to 7,699,735,962 so that between current assets and current liabilities has a negative difference in working capital which is equal to -5,102,239,212

Year 2015

The value of X1 in 2015 is -0.384. There was an increase of 0.092, namely from -0.292 in 2014 to -0.384 in 2015. The increase was due to an increase in working capital from 2014 to 2015. The increase in working capital was 1.390.181.847, from -5.102,239,212 in 2014 to - 6,492,421,059 in 2015. Although total assets decreased by 523,772,607, from 17,450,389,476 in 2014 it fell to 16,926,616,869 in 2015

Year 2016

The value of X1 in 2016 is -0,631 obtained from the results of 2016 working capital amounting to -9,277,649,984 divided by total assets in 2016 of 14,700,318,360. Calculation of the X1 ratio experienced a significant increase of 64.32% from the previous year with a percentage of -0.384 representing the largest increase in the four-year period of this analysis. This is due to a decrease in current assets of 458,319,995 from the previous year accompanied by an increase in short-term debt of 2,326,908,930

Year 2017

The value of X1 in 2017 is -0,746 obtained from the results of 2017 working capital amounting to -10,359,186,000 divided by total assets in 2017 amounting to 13,883,992,000. While the calculation of the X1 ratio in 2017 has increased by 18.23%, namely from the previous year with a percentage of -0,631 there was a slight increase. This was due to an increase in previous working capital -9,277,649,984 to -10,359,186,000 and a decrease in total assets of 14,700,318,360 to 13,883,992,000.

3.1. Conclusion

Working Capital to Total Asset Ratio (X1) Plantations Company has a value ratio (X1) in 2014-2017 experiencing a negative ratio with the worst ratio occurring in 2017, namely (-0,746). This means that companies begin to experience difficulties in paying obligations that are due within a year (short-term debt). From the calculation of X1 (Working Capital/Total Assets) Plantations Company. the period from 2014 to 2017 above, during this period of analysis showed a continuous increase during the 4 years of the study. In this ratio analysis, it is seen that Plantations Company has a relatively high current debt compared to its current assets so as to produce working capital from the total assets that are not good, so that all calculation results are negative in this X1 ratio, in other words working capital produced by this company cannot cover all obligations that have been caused.

Table-2. Retained Earning to Total Assets Ratio (X2)

Tahun	Retained Earnings	Total Assets	X2
2014	-2.388.908.710	17.450.389.476	-0,137
2015	-2.903.478.353	16.926.616.869	-0,172
2016	-5.749.358.302	14.700.318.360	-0,391
2017	-7.389.950.000	13.883.992.000	-0,532

The table above shows that the company's profit balance is negative, which means the company does not get a surplus but a deficit. The company's losses increased every year, starting from 2014 amounting to (2.388.908.710) to (2.903.478.353) in 2015, and in 2016 it increased very significantly (5.749.358.302) and increased losses again to (7.389.950.000) The increase in losses from year to year shows the condition of the company that is not healthy.

X2 2014	=	-2.388.908.710	=	-0,137
		17.450.389.476		
X2 2015	=	-2.903.478.353	=	-0,172
		16.926.616.869		
X2 2016	=	-5.749.358.302	=	-0,391
		14.700.318.360		
X2 2017	=	-7.389.950.000	=	-0,532
		13.883.992.000		

Year 2014

The value of X2 in 2010 was -0,137 which was obtained from the retained earnings balance of 2014 amounting to (2.388.908.710) divided by total assets in 2014 amounting to 17.450.389.476

Year 2015

The value of X2 in 2011 was -0,172 There was an increase from -0,137 in 2014 to -0,172 this year. This increase was due to an increase in the total assets of the company from 2014 to 2015.

Year 2016

The value of X2 in 2016 is -0,391 obtained from retained earnings (5.749.358.302), this amount is divided by total assets in 2016 amounting to 14.700.318.360. This year there was an increase in the calculation of the ratio of 21,9% from the previous year.

Year 2017

The value of X2 in 2017 is -0,532 obtained from retained earnings in 2017, retained earnings ie (7.389.950.000), this amount is divided by total assets in 2017 amounting to 13.883.992.000

3.2. Conclusion

Retained earnings to total assets ratio (X2) calculates the level of profitability of the company. The age of the company influences this ratio because the longer the company operates it allows to facilitate the accumulation of retained earnings (Bell et al., 2013). Plantations Company, Does not have a positive value ratio (X2) in 2014-2017. This means that in that year the company has no profit in holding, this shows that management began to experience financial distress. From the calculation of X2 (Profit Balance/Total Assets) of Plantations Company, The above shows that during this analysis period the company has a negative or deficit retained earnings balance. In conclusion the company is in an unhealthy stage and is experiencing serious financial difficulties.

Table-3. Earning Before Interest And Taxes to Total Assets (X3)

Tahun	EBIT	Total Asset	X3
2014	-506.829.808	17.450.389.476	-0,029
2015	-1.391.246.384	16.926.616.869	-0,082
2016	-321.172.056	14.700.318.360	-0,022
2016	-1.218.203.000	13.883.992.000	-0,088

From the table above, it can be seen that the company's EBIT (EBIT = profit before interest expense and tax) is negative. This shows that the company has no profits but rather losses. Losses experienced by companies experienced a decline and an unstable increase from year to year. In 2014 it showed a value of (506.829.808) and then experienced an increase in the following year, namely (1.391.246.384) in 2015, decreased to (321.172.056) and in 2016 and experienced a very significant loss. significant in 2017 to (1.218.203.000).

This shows that the company's operations tend to experience setbacks and difficulties to develop because the results of the activities carried out by the company do not generate profits but rather losses. Based on the table, the calculation of the X3 ratio is as follows:

X3 2014	=	-506.820.808	=	-0,029
		17.450.389.476		
X3 2015	=	-1.391.246.384	=	-0,082
		16.926.616.869		
X3 2016	=	-321.172.056	=	-0,022
		14.700.318.360		
X3 2017	=	-1.218.203.000	=	-0,088
		13.883.992.000		

Year 2014

The value of X3 in 2014 is -0,029 which is obtained from earnings before interest and taxes in 2014 amounting to (506.820.808) divided by total assets in 2014 amounting to (17.450.389.476). Profit before interest and tax in getting from net income is reduced by cost of goods and expenses including interest expenses and others. The company does not get a profit but losses because the results show negative numbers.

Year 2015

The value of X3 in 2015 is -0,082. There was a decrease in losses of 5,3% from 2014 worth -0,029 this year. This increase was due to a decrease in the company's total assets from 2014 amounting to 17.450.389.476 to 16.926.616.869 in 2015.

Year 2016

The value of X3 in 2016 is -0,022 which is obtained from earnings before interest and tax in 2016 amounting to (321.172.056) divided by total assets in 2016 amounting to 14.700.318.360. Calculation of the X3 ratio has decreased by 6%, namely from the previous year with a value of -0,082. This shows that the company continues to suffer losses despite a decrease in the calculation of the ratio.

Year 2017

The value of X3 in 2017 is -0,088 obtained from pre-tax profit of (1.218.203.000) in 2017 divided by total assets in 2017 of 13.883.992.000. The calculation of the X3 ratio in 2017 has increased by 6,6%, which is from the previous year of -0,022. This is due to a decrease in the total assets of the company amounting to 816.326.360 from 2016 to 2017. Although on the loss side it increased by 897.030.944.

3.3. Conclusion

Earning Before Interest and Taxes to Total Assets (X3) reflects the effectiveness and efficiency of managing all investments that the company has made. From 2014 to 2017 Plantations Company., Has a negative value ratio (X3), that is with a ratio (0,029), (0,082), (0,022), and (0,088) indicating that the smaller the value of the ratio the higher the possibility of bankruptcy. This reflects that the management is less able to manage its assets effectively. From the calculation of X3 (Profit before interest and tax/Total Assets) at Plantations Company, The period of 2014 to 2017 above shows that during this analysis period the company did not get a profit, but a loss. This is due to the burden that the company has each year is greater than the income, so the resulting ratio is negative every year.

Table-4. Market Value of Equity to Book Value of Debt (X4)

Tahun	Market Price Per Shares	Issued and Fully Paid Shares	Market Value of Equity	Total Liabilities	X4
2014	500	13.720.471.386	6.860.235.693.000	13.287.430.000.000	0,52
2015	500	13.720.471.386	6.860.235.693.000	13.569.811.257.000	0,51
2016	500	13.720.471.386	6.860.235.693.000	13.502.629.178.000	0,51
2017	163	13.720.471.386	2.236.436.835.918	14.352.436.000.000	0,16

From the table above, it can be seen that the number of liabilities has increased in 2014 and 2015, and in 2016 the number of liabilities has decreased. However, in 2017 the number of liabilities has increased again. In 2014, the value of 13.287.430.000.000 was then increased in 2015, namely 13.569.811.257.000 and in 2016 showed a decrease of 67.182.079.000 from 2015, and again increased in 2017 to 14.352.436.000.000 The increase in the total liabilities of the company was due to increased business debt so that the number of liabilities also increased. Based on the table, the calculation of the X4 ratio is as follows:

X4 2014	=	6.860.235.693.000	=	0,52
		13.287.430.000.000		
X4 2015	=	6.860.235.693.000	=	0,51
		13.569.811.257.000		
X4 2016	=	6.860.235.693.000	=	0,51
		13.502.629.178.000		
X4 2017	=	2.236.436.835.918	=	0,16
		14.352.436.000.000		

Year 2014

The value of X4 in 2014 was 0,52 obtained from the equity market price in 2014 amounting to 6.860.235.693.000 derived from the number of outstanding shares multiplied by the price of outstanding shares per share, then the results divided by total liabilities in 2014 amounted to 13.287.430.000.000 Shares that are circulating in each year, namely the period 2014 to 2017, are 13.720.471.386 shares each year.

Year 2015

The value of X4 in 2015 was 0,51 and there was a non-significant decrease of 0,01 points in 2014 to be 0,51 this year. The decline was due to an increase in the number of liabilities in 2015 obtained.

Year 2016

The value of X4 in 2016 is 0,51 obtained from the equity market price of 2016 amounting to 6.860.235.693.000 derived from the number of outstanding shares multiplied by the price of outstanding shares per sheet, then the results divided by total liabilities in 2016 amounted to 13.502.629.178.000 And the calculation of the X4 ratio in 2016 has no change compared to the calculation of the ratio in the previous year. This is because the increase in equity market prices is also offset by an increase in total liabilities.

Year 2017

The value of X4 in 2017 is 0,16 obtained from the equity market price in 2017 amounting to 2.236.436.835.918 derived from the number of outstanding shares multiplied by the price of outstanding shares per share, and then the results divided by total liabilities in 2017 amounted to 14.352.436.000.000 Calculation of the X4 ratio decreased by 0,35 points from the previous year with 0,51 points. This year there was a significant decline in shares from the previous year.

3.4. Conclusion

From the calculation of X4 (Equity Market Price/Total Liabilities) at Plantations Company The period of 2014 to 2017 above shows that during the period 2014 to 2015 there was a very insignificant decline of 0,01 points 2015 to 2016 there was no change in the number of shares or the price of shares in circulation, only a decrease in the number of liabilities. It can be concluded that overall Plantations Company is quite attractive to investors in 2014-2016 because the price of shares from year to year has remained stable. However, this is not effective because on the liability side there was an increase from 2014 total liabilities of 13.287.430.000.000 to 2015 with a total of 13.569.811.257.000, an increase of 282.381.257.000 and in 2016 a decrease of 67.182.079.000 from total liabilities of 13.502.629.178.000

Table-5. Z-Score Analysis for Plantations Company.

Tahun	K. X1	X1	K. X2	X2	K. X3	X3	K. X4	X4	Z-SCORE	HASIL
2014	6,56	-0,292	3,26	-0,137	6,72	-0,029	1,05	0,52	-2,014	Bangkrut
2015	6,56	-0,384	3,26	-0,172	6,72	-0,082	1,05	0,51	-3,095	Bangkrut
2016	6,56	-0,631	3,26	-0,391	6,72	-0,022	1,05	0,51	-5,026	Bangkrut
2017	6,56	-0,746	3,26	-0,532	6,72	-0,088	1,05	0,16	-7,051	Bangkrut

Estimated manual calculation, formula

$$\begin{aligned}
Z_{2014} &= 6,56X1 + 3,26X2 + 6,72X3 + 1,05X4 \\
&= 6,56 (-0,292) + 3,26 (-0,137) + 6,72 (-0,029) + 1,05 (0,52) \\
&= -2,014 \\
Z_{2015} &= 6,56X1 + 3,26X2 + 6,72X3 + 1,05X4 \\
&= 6,56 (-0,384) + 3,26 (-0,172) + 6,72 (-0,082) + 1,05 (0,51) \\
&= -3,095 \\
Z_{2016} &= 6,56X1 + 3,26X2 + 6,72X3 + 1,05X4 \\
&= 6,56 (-0,631) + 3,26 (-0,391) + 6,72 (-0,022) + 1,05 (0,51) \\
&= -5,026 \\
Z_{2017} &= 6,56X1 + 3,26X2 + 6,72X3 + 1,05X4 \\
&= 6,56 (-0,746) + 3,26 (-0,532) + 6,72 (-0,088) + 1,05 (0,16) \\
&= -7,051
\end{aligned}$$

Based on the calculation results of table 5 using the Altman Z formula "-Score Modification, Plantations Company, For the period of 2014 until the end of the 2017 period is said to fall into the category of unhealthy and very high risk for bankruptcy. The possibility of the company at the beginning of the analysis period to experience bankruptcy in the area is very vulnerable because the Z-Score of 2014 to 2017 shows a number below 1.1 and even negative.

Table-6. Springate Model for Plantations Company

Tahun	A	B	C	D	SPRINGATE
2014	-0,292	-0,029	-0,066	0,151	-0,373
2015	-0,384	-0,082	-0,175	0,119	-0,715
2016	-0,631	-0,022	-0,031	0,106	-0,695
2017	-0,746	-0,088	-0,103	0,108	-1,062

Estimated manual calculation, formula

$$\begin{aligned}
S_{2014} &= 1,03A + 3,07B + 0,66C + 0,40D \\
&= 1,03 (0,292) + 3,07 (0,029) + 0,66 (0,066) + (0,40 \times 0,151) \\
&= -0,373 \\
S_{2015} &= 1,03A + 3,07B + 0,66C + 0,40D \\
&= 1,03 (0,384) + 3,07 (0,082) + 0,66 (0,175) + (0,40 \times 0,119) \\
&= -0,715 \\
S_{2016} &= 1,03A + 3,07B + 0,66C + 0,40D \\
&= 1,03 (0,631) + 3,07 (0,022) + 0,66 (0,031) + (0,40 \times 0,106) \\
&= -0,695 \\
S_{2017} &= 1,03A + 3,07B + 0,66C + 0,40D \\
&= 1,03 (0,746) + 3,07 (0,088) + 0,66 (0,103) + (0,40 \times 0,108) \\
&= -1,062
\end{aligned}$$

From the calculation of table 6, the above shows that by using the Springate analysis method. The results of the PT bankruptcy prediction. Plantations Company, Potentially bankrupt this can be seen from the S-Score <0,862 for all the years studied.

Working Capital to Total Assets Ratios (A). negative A value in Plantations Company, Which occurs every year from 2014-2017. This illustrates that the company's ability to pay off its short-term debt with short-term assets has declined in the past 3 years.

Net Profit Before Interest And Taxes to Total Asset Ratios (B) Plantations Company, Has a negative value in 2014-2017 Value (B) This illustrates that the company's ability to generate profits for investors is decreasing and the ability to manage company assets is good.

Net Profit Before Taxes to Current Liabilities Ratios (C) Plantations Company, Has a negative ratio in 2014-2017. value of negative ratio. This shows that during the past 4 years the company was unable to finance current debt activities through pre-tax profit.

Sales to Total Assets Ratio (D) Plantations Company, Decreased in 2014-2017 from the ratio of 0,151 to 0,119 and then 0,106 and rose slightly to 0,108. This shows that in 2014-2017 the company experienced a decline in managing all assets owned by the company, which resulted in a decrease in sales volume.

Based on the calculations above, it can be seen that the bankruptcy rate of Plantations Company for the period of 2014 until the end of the 2017 period is said to fall into the category of tend to be unhealthy or in difficult financial conditions.

4. Conclusions and Suggestions

Based on research on the Plantations Company In the period of 2014 until 2017 and from the results of the analysis of the Altman Z-Score method and discussion with calculations shows the numbers in 2014 (2,014), 2015 (3,095), 2016 (5,026) and 2017 (7,051) then the conclusions that can be taken are as follows, according to the results obtained using the modified Altman Z-Score model in the 2014-2017 period Plantations Company, Potentially experiencing bankruptcy, this is indicated by the value of Z-Score <1.1 each year so that it can be concluded that the financial condition of Plantations Company. is experiencing financial distress in the 2014-2017 period.

Not different from the results obtained using the Springate model. Plantations Company, In the 2014-2017 period has a cut-off value of S-Score $<0,862$ each year, which is aimed at numbers in 2014 (0,373), 2015 (0,715), 2016 (0,695) and final year research 2017 (1,062). This means that the financial condition of Plantations Company., Is experiencing financial distress in the 2014-2017 period according to the Springate method.

The method of financial distress analysis used in this study is the Altman Z-Score method and the Springate method, because the results of the study prove that the Altman Z-Score method and the Springate method can be implemented in detecting the possibility of bankruptcy in non-manufacturing companies engaged in the industrial sector Plantations Company.

Overall, in the period of 2014 to 2017, which was analyzed, all were in an unhealthy position and had a high enough risk of bankruptcy. Based on the results of the research and discussion above, as for the suggestions that researchers can give are as follows:

1. The prediction of corporate bankruptcy can not only be done by using the Altman and Springate financial ratios, but also must pay attention to other factors, both those originating from the company's internal management and those from outside the company such as economic, political, etc. . Other factors beyond the financial ratio of the Altman model cannot be used in this study because of the difficulty of measurement. If these factors can be obtained and can be accurately measured, a more accurate level of bankruptcy prediction will be obtained.
2. Plantations Company., should minimize current debts, because the Z Score is in the gray zone due to current debt that exceeds the current assets held each year in the study period in order to reduce the risk of bankruptcy. And it could also be to increase company capital so that the company's operations can run stably.

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