

ANALYSIS OF FINANCIAL DISTRESS ON INFRASTRUCTURE COMPANIES LISTED AT INDONESIA STOCK EXCHANGE USING S-SCORE MODEL

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Abstract: It is important for a company to be able to predict the probability of its financial distress. Moreover, a company need to assessed the losses that would occur under various level of financial distress.

The poor performance of a firm is caused by the financial distress itself. The ability of a company to be able to compete is determined by the performance of the company itself. Companies that are not able to compete to maintain its performance will gradually displaced from the environmental industry and will be bankrupt. In order for the survival of a company is maintained, then the management should be able to contain or even more spur increased performance. The method in this study is descriptive, and Springate method of S-Score were used to analyzed the data given from companies listed in the Infrastructure, Utilities and Transportaton Sector at Indonesia Stock Exchange. Results from the study showed that in the calculation using Springate method there two comapanies in the bankrupt categories namely META and JSMR in year 2014 whereas one company is completely solvent, they are CMNP based on year analysis period of 2010-2014.

Keywords: Springate Method, Bankruptcy, Indonesian Stock Exchange

1. Introduction

1.1 Background of the Study

It is important for a company to be able to predict the probability of its financial distress. Moreover, a company need to assessed the losses that would occur under various level of financial distress (Beaver, Correia, and McNichols, 2011, p. 5). The poor performance of a firm is caused by the financial distress itself (Altman & Hotchkiss, 2006). The ability of a company to be able to compete is determined by the performance of the company itself. Companies that are not able to compete to maintain its performance will gradually displaced from the environmental industry and will be bankrupt. In order for the survival of a company is maintained, then the management should be able to contain or even more spur increased performance.

In his studies, Willy (2011, p. 4) said that Altman (Z-Score) Model is one of the multivariate estimation approach, multiple discriminant analysis which serves to

predict corporate bankruptcy with the level of precision and accuracy that is relatively reliable with five variables. Following procedures by Altman, Vasigh, Fleming and Mackay (2010:44) said that "Springate used step-wise multiple discriminate analysis to select four out of 19 popular financial ratios that best distinguished between sound business and those that are actually failed." This model was quite effective, and has an accuracy of 88% when applied by Bozeras in 1979, and shows 83.3% efficacy when applied by Sands. Moreover, a study in the University of Waterloo and the University of Windsor in 2007, that among the basic linear discriminant model, the Springate model has the lowest among 30 selected model with the lowest error (Shemetev, 2010, p. 310).

According to Shemetev (2010:311), the Model has four indicators in the Z-indicator, they are: 1. Net Working Capital to Total Assets 2. Retained Earnings to Total Assets 3. Earning Before Interest and Tax to Total 4. Asset Market Value of Equity to Book Value of Debt 5. Sales to Total Assets. Springate Model is a model that uses the ratio of multiple discriminate analysis (MDA). In the MDA method takes more than one financial ratios related to the bankruptcy of the company to establish a good model. The ratio used, namely: 1. Working capital / total assets 2. Net profit before interest and taxes / total assets 3. Net profit before taxes / current liabilities 4. Sales / total assets In a study conducted by Ida and Sandy Santoso (2011 , p. 21), this model has a 92.5% accuracy in the tests performed Springate. Indonesia is abundant with natural resources. As the new leader was elected in the country, a new hope arises. Projects regarding infrastructure was planned and implemented. However, it is interesting to see what is the performance of companies in these industries. Are they ready for the set projects or are they potentially bankrupt? Based on the description above, the researchers willing to conduct research on "Analysis of Financial Distress on Infrastructure Companies Listed at Indonesia Stock Exchange using S-Score Model".

1.2 Statement of the Problem

Based on the background of the study above, the statement of the problem is to analyze the financial distress of companies listed in *Infrastructure, Utilities and Transportaton* Sector at Indonesia Stock Exchange with the following research questions, they are as follows:

- a. What is the analysis of financial distress of the Infrastructure Companies listed at the Indonesia Stock Exchange based on Springate method of S-Score from year 2010-2014?
- b. Is there any difference of financial distress between Infrastructure Companies listed at the Indonesia Stock Exchange based on Springate method of S-Score from year 2010-2014?

2. Review of Related Literature

The purpose of financial statements is to provide information to those in need on the condition of a company in terms of figures in monetary terms (Fahmi, 2014). Hery (2015: 132) added that financial statement analysis is a process to dissect

financial statements into its elements and examine each of these elements in order to gain insight and understanding of good and appropriate to the financial statements themselves. Analyzing financial statements meant to assess the performance of the company, both internally and for comparison with other companies that are in the same industry. Financial statement analysis can help management to identify their weaknesses and then make rational decisions to improve the company's performance in order to achieve the company's goals.

The term "bankruptcy" is found in the treasury of Dutch, French, Latin and English. In French, the term "failite" means a strike or bottlenecks in making payments. People who strike or jammed or stopped paying its debts called Le FALLI. In the Dutch language faillit used term that has a double meaning, namely as a noun and an adjective. Whereas in English used the term to fail, and in the Latin language term used failire. In countries that speak English, for the understanding of bankruptcy and insolvency used the term "bankrupt" and "bankruptcy." Short-term financial difficulties are temporary and have not been so severe. But such difficulties if not treated can develop into trouble is not solvable (debts greater than assets). If not solvable, the company could be liquidated or reorganized (Hanafi, 2009, p. 262). Liquidation selected if the liquidation value is greater than the value of the company if it is passed. Reorganization chosen if companies are still showing prospects and thus the value of the company if it is passed is greater than the value of the company if it liquidated.

There are several models that predict business bankruptcy and Springate is one such model (Sadgrove, 2012). According to Vickers (2006), the method invented by Gordon LV Springate Springate in 1978. Springate find there are 4 of 19 financial ratios that most contribute to the prediction of corporate bankruptcy. Fourth financial ratios are combined in a formula that called the method Springate. The next Springate also impose limits (standards) in the form of 0,862 to predict the value of the company, potentially bankrupt or potential as a healthy company (not insolvent). Springate method defined in a formula as follows: $Z = 1.03A + 3.07B + 0.66C + 0.4D$
 Description: A = working capital / total assets B = earnings before interest and taxes / total assets C = profit before tax / total current liabilities D = sales / total assets. Vasigh, Fleming and McKay (2010:204) said that "A company may be classified as failed when the calculated Z value is less than .862." This indicates that the assessment criteria if the value of $Z < 0,862$, means that the companies facing the threat of bankruptcy. If the value $0.862 < Z < 1.062$ it indicates that management must be careful in managing the company's assets and they are prone to bankruptcy. And when the value of $Z > 1.062$ then show the company in a sound financial condition and have no problems with finances, thus, they are not insolvent.

3. Research Method

Based on the variables studied, the background and the problem given in the study, then the type of research used in this research is descriptive method. Facts and data

obtained during the the study, are processed and analyzed before conclusions drawn based on existing theory, so as to provide an overview of the financial situation of the three company Tolls, Airport and Port Sub-Sector of Infrastructure Sector Listed in Indonesia Stock Exchange. The companies of Tolls, Airport, and Port Sub-Sector of Infrastructure, Utility and Transportation Sector are Cipta Marga Nusaphala Persada Tbk (CMNP), Jasa Marga Tbk (JSMR), Nusantara Infrastructure Tbk d.h. Metamedia Technologies Tbk (META). The data used in the analysis was obtained from the financial statements from year period 2010-2014. Analysis of t-test was used, namely pair-sample t-test for statistical analysis.

4. Results of the Study

4.1. Infrastructure Sector Financial Distress Analysis

4.1.1. Cipta Marga Nusaphala Persada Tbk (CMNP)

Analysis of companies financial distress in the Farming sector used data from the Fisheries Sub Sector. The following table analyzed the s-score for companies potential distress from year 2010-2014.

Number and table 1 below shows CMNP financial ratios that were analyzed using S-Score of Springate Method.

Table 1: CMNP S-Score Analysis

	Year	Year	Year	Year	Year
Analysis	2010	2011	2012	2013	2014
Working Capital/Total Asset	0.10	0.19	0.27	0.27	0.10
EBIT/Total Asset	0.18	0.17	0.18	0.10	0.18
EBT/Current Liabilities	2.79	3.23	3.96	1.08	2.79
Sales/Total Asset	0.26	0.25	0.24	0.29	0.26
S-SCORE	2.60	2.96	3.55	1.41	1.30
Prediction	Solvent	Solvent	Solvent	Solvent	Solvent

Based on the table above using the criteria used to predict the bankruptcy of a company with this model is, for companies that have a S-Score $\geq 0,862$ then it shall be declared not bankrupt, while the S-Score $\leq 0,862$, it can be declared bankrupt. Results in Table 1 generates predictions that CMNP company is generally not bankrupt and shows that they have a good and healthy financial performance. However, looking at the value of the S-Score each year, it shows that there is a decline in the S-Score especially in year 2014.

4.1.2. Jasa Marga (Persero) Tbk (JSMR)

Number and table 2 below shows JSMR financial ratios that were analyzed using S-Score of Springate Method.

Table 2: JSMR S-Score Analysis

	Year	Year	Year	Year	Year
Analysis	2010	2011	2012	2013	2014
Working Capital/Total Asset	0.09	0.00	-0.09	-0.04	-0.02
EBIT/Total Asset	0.10	0.11	0.12	0.08	0.10
EBT/Current Liabilities	0.60	0.39	0.31	0.27	0.42
Sales/Total Asset	0.23	0.31	0.37	0.21	0.21
S-SCORE	0.90	0.72	0.63	0.47	0.63
Prediction	Solvent	Bankrupt	Bankrupt	Bankrupt	Bankrupt

Based on table 2 above using the criteria used to predict the bankruptcy of a company with S-Score model, for companies that have a S-Score $\geq 0,862$ then it shall be declared not bankrupt and solvent, while the S-Score $\leq 0,862$, it can be declared bankrupt. Results in Table 2 generates predictions that JSMR company is generally not bankrupt and shows that they are solvent and have a good and healthy financial performance. However, looking at the value of the S-Score each year, it shows that there is a decline in the S-Score especially in year 2014.

4.1.3. Nusantara Infrastructure Tbk (META)

Number and table 3 below shows META financial ratios that were analyzed using S-Score of Springate Method.

Table 3: META S-Score Analysis

	Year	Year	Year	Year	Year
Analysis	2010	2011	2012	2013	2014
Working Capital/Total Asset	0.27	0.13	0.10	0.30	0.22
EBIT/Total Asset	0.04	0.05	0.05	0.05	0.05
EBT/Current Liabilities	-1.97	-0.18	0.21	1.58	0.30
Sales/Total Asset	0.10	0.13	0.13	0.17	0.13
S-SCORE	-0.87	0.21	0.46	0.30	0.63
Prediction	Bankrupt	Bankrupt	Bankrupt	Bankrupt	Bankrupt

Based on table 3 above using the criteria used to predict the bankruptcy of a company with S-Score model, for companies that have a S-Score $\geq 0,862$ then it shall be declared not bankrupt and solvent, while the S-Score $\leq 0,862$, it can be declared bankrupt. Results in Table 2 generates predictions that JSMR company is generally not bankrupt from year 2010-2013 and shows that they are solvent and have a good and healthy financial performance. However, in year 2014, the value of the S-Score

shows that there is a decline in the S-Score and the value is 0.49 which is below the standard 0.862 given, therefore, the analysis for the year is that the company is predicted to have bankruptcy.

4.2. Infrastructure Companies Financial Distress Difference

Analysis of companies financial distress difference in the Infrastructure sector based on data from the Tolls, Airport, and Port Sub Sector namely CMNP, META and JSMR companies. The following table analyzed the S-score mean and significant difference of the said companies potential distress from year 2010-2014.

Table 4: Pair Sample t-test

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	META	.200000	5	.4472136	.2000000
	CMNP	1.800000	5	.8366600	.3741657
Pair 2	META	.200000	5	.4472136	.2000000
	JSMR	.669740	5	.1556965	.0696296
Pair 3	CMNP	1.800000	5	.8366600	.3741657
	JSMR	.669740	5	.1556965	.0696296

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	META - CMNP	-1.600E0	1.1401754	.5099020	-3.0157148	-.1842852	-3.138	4	.035
Pair 2	META - JSMR	-4.697E-1	.5703169	.2550535	-1.1778820	.2384020	-1.842	4	.139
Pair 3	CMNP - JSMR	1.1302E0	.7902034	.3533897	.1490929	2.1114271	3.198	4	.033

Based on table 4 above using the criteria used to predict the bankruptcy of a company with S-Score model, for companies that have a S-Score $\geq 0,862$ then it shall be declared not bankrupt and solvent, while the S-Score $\leq 0,862$, it can be declared bankrupt. Results in Table 4 generates the mean score of data from 2010-2014, and for the first comparison of META and CMNP, the results shows that there is a significant difference between META and CMNP with $p = 0.035$ at $\alpha = 0.05$ and the mean results of S-Score of 0.2000 and 1.8000, respectively. The results indicated that META is in the state of bankruptcy and potentially bankrupt while CMNP is a healthy company. In another pair between META and JSMR, the results shows that there is a no significant difference between META and JSMR with $p = 0.139$ at $\alpha = 0.05$ and the

mean results of S-Score of 0.2000 and 0.669, respectively. The results indicated that META and JSMR are in the state of bankruptcy and potentially bankrupt. And for the last pairing between CMNP and JSMR, the results shows that there is a significant difference between CMNP and JSMR with $p = 0.033$ at $\alpha = 0.05$ and the mean results of S-Score of 1.8000 and 0.669, respectively. The results indicated that JSMR is in the state of bankruptcy and potentially bankrupt while CMNP is a healthy company.

5. Conclusion

Based on the results of the study and the discussion above, the conclusion of the study are as follows:

1. In the calculation for the prediction of bankruptcy, out of the four companies, there are two companies that show poor financial performance, they are META and JSMR. There are one company, CMNP, that shows that they are in a healthy condition.
2. The statistic analysis on the difference of financial distress between Infrastructure companies shows that there are significant difference between the pairing companies, and CMNP shows that the difference are because they are in a healthy performance and the rest, META and JSMR shows poor performance at $\alpha = 0.05$.

The study are based on prediction model, therefore it is recommended for further research to conduct a another research to see the accuracy of the prediction.

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