

Bankruptcy Prediction in PT Blue Bird, Tbk 2011-2016 Using Altman Z-Score, Springate, and Zmijewski Model

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Abstract: The aim of this study is to determine the financial condition of PT. Blue Bird, Tbk in 2011-2016 by using Altman Z-score, Springate, and Zmijewski model, in purpose to predict the financial distress that occurs in the company. The data used in this study are the secondary data from Transportasi Service Companies, namely PT. Blue Bird, Tbk. Data analysis techniques of this study are the discriminant analysis of Altman, Springate, and Zmijewski. The analysis of Altman model is grouped into three parts of companies, include companies that experience good condition, grey areas, and bankruptcy. Springate model analysis is grouped into two parts of companies, include companies that is in good condition and potentially bankrupt. The analysis of Zmijewski model is grouped into two parts of companies, include companies that are good condition and potentially bankrupt. The results of financial distress analysis of PT. Blue Bird, Tbk period 2011-2016 using Altman model indicates that companies in the category grey areas. The results of the analysis using Springate model shows that companies in the category good condition. The analysis result using Zmijewski model also shows companies in the category good condition.

Keywords: Altman, Bankruptcy, Springate, Zmijewski

1. INTRODUCTION

The technological advancement which frequently discussed many parties nowadays, develop business online-based transportation utilizing the sophistication applications for the internet. The appearance of this online-based transport application facilitates the society in ordering transport services and carryingout mobilization.

Online-based transportation business becomes popular an transportation services. Online-based transportation shoves the innovation subject of transportation combined by communication technology. Originally, people use the conventional way to use general transport, and now the people updates the custom to use online-based transportation services. The competition between providers of transportation

conventional and online causes the company to sustain his business. The continuity of business can run well if the company is able to analyze any problems early and take any policies.

Bankruptcy can be experienced in every company, both smalls and large companies. Indicators of bankruptcy is started by the company's financial difficulties, so that the manager and the company's owner should prevent potential bankruptcy. Model of Altman Z-score, Springate, and Zmijewski is used to predict the potential bankruptcy.

Transportation companies in Indonesia, whether it is online or conventional. Is increased from year to year. Transportation services company that would have been predicted the bankruptcy level, is PT Blue Bird, Tbk, the big companies with speciality of passenger transportation services. The

presence of online-based transportation impacts the income of PT Blue Bird, Tbk which may cause the potential bankruptcy of the company.

From the description above the researchers argues that it deserves to host the research on Bankruptcy Prediction using Altman Z-Score, Springate, and Zmijewski model in PT Blue Bird, Tbk 2011-2016 Period.

The purpose of this study is to know the bankruptcy prediction using Altman Z-score, Springate and Zmijewski model at PT Blue Bird, Tbk 2011-2016 period.

2. LITERATURE REVIEW

2.1 Bankruptcy

Hanafi (2014:638) declares bankruptcy as seen from the flow of cash, the cash flow generated in the company isn't enough to run its, companies can be said to be insolvent, or the amount of debt is greater than the amount of its assets. Management companies must improve and maintain the company's overall condition for getting better. The analysis of the potential for bankruptcy is committed by the management as the beginning to anticipate and avoid the occurrence of bankruptcy of the company.

Lesmana and Surjanto (2004:183-184) says the company's bankruptcy indicator: decreased income significantly, there is a significant profit decline, the stock price has decreased significantly, there is a high risk in running the company, the dividend was cut significantly, couldn't pay debts due, worsening the quality of the management, management wasn't prepared to anticipate changes in market conditions, and poor cost control of the company.

Margaretha (2011:738) states there are two factors caused bankruptcy, namely 1) internal factors: the management of the company's management isn't effective and efficient, the amount of capital is smaller than the amount of the obligation, and the management of the company do cheating; 2) external factors: the company isn't ready to anticipate the changing needs of customers, the difficulty of the spare part, the disharmony's relationship with creditors or the debtor, and the increasingly intense competition in the business.

2.2 Analysis of financial statements

Analysis of financial statements are used to find out the financial progress, operating results, and the company's profit increase or not. The analysis is done by measuring the relationship between the outposts of financial reports on year after year to see the trend of financial companies increased or decreased. Kasmir (2010:91) states financial reporting analysis activities conducted to view the company's financial condition in one period or more. Kasmir (2010:92) states the purpose of the financial analysis report is looking at the financial position in one period or more, know the strengths and weaknesses, can improve the financial condition of the period ahead, assessing the performance of the company, and can compare the results obtained with other similar companies.

2.3 Previous relevant research

2.3.1 Yulianthini, et al (2016)

The researcher predicts the bankruptcy on telecommunication companies

registered for BEI 2012-2014 using Springate, and Altman, Zmijewski model. The results of Altman Z-Score model in PT Bakrie Telecom Tbk, PT Smart Telecom Tbk, and PT Indosat, Tbk is into bankruptcy. The results of Springate model in PT Bakrie Telecom Tbk, PT XL Axiata Tbk, PT Smart Telecom Tbk, and PT Indosat Tbk is into bankruptcy. The results of Zmijewski model in PT Bakrie Telecom Tbk and PT Smart Telecom Tbk is into bankruptcy.

2.3.2 Yuliastary dan Wirakusuma (2014)

The researchers predict the potential of bankruptcy in PT Fast Food Indonesia, Tbk 2008-2012 using Altman, Springate, Zmijewski model. The research results prove that Altman, Springate, Zmijewski model company is in a good condition.

3. RESEARCH METHODS

3.1 Design research methodology

The researchers uses descriptive quantitative methods of analysis. The descriptive method is a method used to see and describe the character variable research under certain conditions (Arini and Triyonowati, 2013). Methods are undertaken to analyze the financial reports outposts, and categorize the company bankrupt or not. The study didn't use the statistic test, the conclusions of the criteria that have been set. Research on PT Blue Bird, Tbk by collecting data, information from the site www.idx.co.id in the form of the financial reports of PT Blue Bird, Tbk 2011-2016.

3.2 Data analysis technique

The stages committed by writers to analyse the bankruptcy on PT Blue Bird, Tbk registered in BEI 2011-2016 period, include:

a. Doing the calculations to the level of bankruptcy prediction using each Altman, Springate, and Zmijewski model.

1) Calculate the financial ratios using Altman model:

$$X_1 = \frac{\text{Net Working Capital}}{\text{Total Assets}}$$

$$X_2 = \frac{\text{Retained Earnings}}{\text{Total Assets}}$$

$$X_3 = \frac{\text{Earning Before Interest and Tax}}{\text{Total Assets}}$$

$$X_4 = \frac{\text{Total Equity}}{\text{Total Liability}}$$

$$\text{Resources : Rahmadini (2016)}$$

2) Calculate the financial ratios using Springate model:

$$A = \frac{\text{Net Working Capital}}{\text{Total Assets}}$$

$$B = \frac{\text{Earning Before Interest and Tax}}{\text{Total Assets}}$$

$$C = \frac{\text{Earning Before Tax}}{\text{Current Liabilities}}$$

$$D = \frac{\text{Revenue}}{\text{Total Assets}}$$

$$\text{Resources : Yuliastary dan Wirakusuma (2014)}$$

3) Calculate the financial ratios using Zmijewski model:

$$X_1 = \frac{\text{Earning After Tax}}{\text{Total Assets}}$$

$$X_2 = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

$$X_3 = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Resources : Endang, et al (2014)}$$

b. Interpreting the scores of Altman, Springate, and Zmijewski model.

- c. Interpreting the scores of discriminant analysis using Altman model:

$$Z'' = 6,56X_1 + 3,26X_2 + 6,72X_3 + 1,05X_4$$

Where:

$Z'' < 1,1$ bankrupt condition company.

$1,1 \geq Z'' \geq 2,6$ grey areas company.

nilai $Z'' > 2,6$ good condition company.

Resources : Rahmadini (2016)

- d. Interpreting the scores of discriminant analysis using Springate model:

$$S = 1.03A + 3.07B + 0.66C + 0.4D$$

Where:

$S < 0,862$ bankrupt condition company.

$S > 0,862$ good condition company.

Resources : Yuliastary dan Wirakusuma (2014)

- e. Interpreting the scores of discriminant analysis using Zmijewski model:

$$X = -4,3 - 4,5X_1 + 5,7X_2 - 0,004X_3$$

Where:

$X < 0$ or negative, good condition company.

$X > 0$ or positive, bankrupt condition company.

Resources : Endang, et al (2014)

- f. Analyzing the classification of values from Altman, Springate, and Zmijewski model, then evaluating the financial performance of PT Blue Bird, Tbk 2011-2016 period included in the bankrupt or good condition.

4. RESULT AND DISCUSSION

4.1 Data analysis

4.1.1 Altman Z-score model

The results of the calculation using Altman Z-score model are presented in the form of tables and charts to facilitate the researchers in assessing the good condition of the company.

Table 4.1 Data Calculation Altman Z-score

Year	X ₁	X ₂	X ₃	X ₄	Z-score	Category
2011	-0,15	0,04	0,19	0,51	0,97	Bankrupt
2012	-0,17	0,06	0,16	0,37	0,56	Bankrupt
2013	-0,22	0,14	0,20	0,32	0,70	Bankrupt
2014	-0,03	0,11	0,15	1,01	2,24	Grey Area
2015	-0,05	0,21	0,16	1,53	3,05	Good
2016	0,01	0,25	0,11	1,77	3,48	Good

Resources : Secondary data 2011-2016 processed by 2017

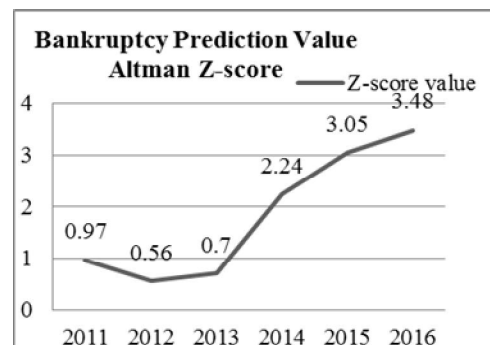


Figure 4.1 Graph Bankruptcy Prediction Value of Altman Z-score

The results value calculation of the Z-score in 2011 is 0.97 categorized as bankrupt, the value of working capital is negative and low assets. In 2012 is decreased by 42% from 2011 is categorized as bankrupt, the working capital is negative, declining earnings before interest and tax, the book value of equity and total debt soaring. In 2013 it is increased 25% from

2012 is categorized as bankrupt, working capital is negative, declining equity value and the rise in total debt. In 2014 shows an increase in 220% of 2013 including the category of grey area, the company was able to do improvements in managing, meet short-term obligations, and enhance book value of equity with additional capital deposited. In 2015 shows an increase of 36% from 2014 including good category, and companies are able to do improvements in managing, meet short-term obligations, enhance the value of the balance of the profit not specified its use, increase earnings before interest and taxes, and increase the book value of equity. In 2016 indicates an increase in 14% from 2015 including good category, the company was able to make improvements in managing the balance value not yet determined its use and increase the book value of equity of a company.

4.1.2 Springate model

The results of the calculation using Springate S-score model are presented in the form of tables and charts to facilitate the researchers in assessing the good condition of the company.

Table 4.2 Data Calculation Springate S-score

Year	A	B	C	D	S-score	Category
2011	-0,15	0,19	0,54	0,87	1,14	Good
2012	-0,17	0,16	0,42	0,80	0,92	Good
2013	-0,22	0,20	0,58	0,78	1,08	Good

2014	-0,03	0,15	0,68	0,66	1,14	Good
2015	-0,05	0,16	1,15	0,77	1,51	Good
2016	0,01	0,11	0,85	0,66	1,21	Good

Resources : Secondary data 2011-2016 processed by 2017

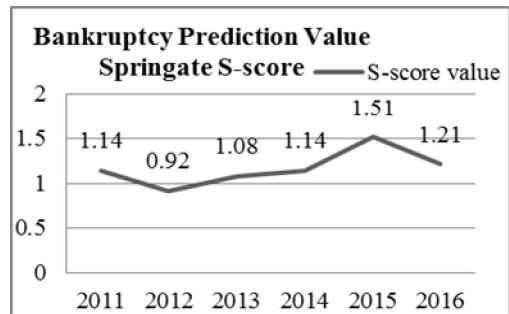


Figure 4.2 Graph Bankruptcy Prediction Value of Springate S-score

The results value calculation using S-score in 2011 counting to 1.14 including good category, the value of EBTCL and a high of variable other than RTA. In 2012 is decreased by 19% from 2011 categorized as good, decreasing the value of earnings before interest and tax, earning before tax, and soaring debt. In 2013 shows an increase of 17% from 2012 including the good category, declining debt, increased earnings before interest and tax, earning before taxes, and net income. In 2014 shows an increase of 6% from 2013 including the good category, increasing assets, net income, and declining debt. In 2015 shows an increase of 32% from 2014 including good category, increased net income, earnings before interest and taxes, a reduction of debt. In 2016 is decreased by 20% from 2015 including good category, declining business profits income, earnings before income taxes, and net income.

4.1.3 Zmijewski model

The results of the calculation using Zmijewski X-score model are presented in the form of tables and charts to facilitate the researchers in assessing the good condition of the company.

Table 4.3 Data Calculation Zmijewski X-score

Year	-4,3	X ₁	X ₂	X ₃	X-score	Category
2011	-4,3	0,02	0,66	0,54	-0,632	Good
2012	-4,3	0,03	0,73	0,52	-0,272	Good
2013	-4,3	0,14	0,76	0,34	-0,601	Good
2014	-4,3	0,10	0,50	0,85	-1,903	Good
2015	-4,3	0,12	0,40	0,59	-2,562	Good
2016	-4,3	0,07	0,36	1,08	-2,564	Good

Resources : Secondary data 2011-2016 processed by 2017

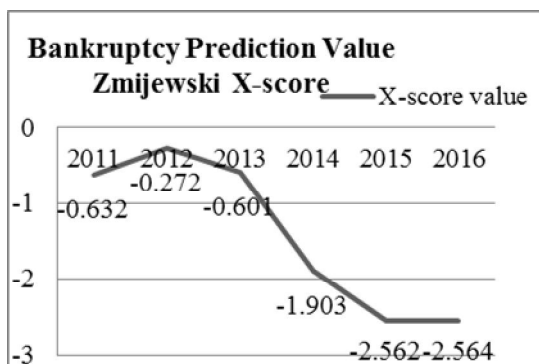


Figure 4.3: Graph Bankruptcy Prediction Value of Zmijewski X-score

The results value calculation using X-score in 2011 are -0.632 including good category, total value of liability to the total assets that is higher than other variables. In 2012 is decreased by 57% from 2011 the good category, including an increase in total debt. In 2013 shows an increase of 121% from 2012 including the good category, increased profits after tax, fixed

assets and decrease in short-term debt. In 2014 shows an increase of 217% from 2013 categories good, decrease in total debt, rising smoothly assets cash and cash equivalents. In 2015 showed an increase of 35% from 2014 including good category, increased earnings after tax, fixed assets and decrease in total debt. In 2016 indicates an increase of 0.08% from 2015 good category, decrease in total debt that is good debt short term and long term, and increasing the value of cash and cash equivalents.

4.2 Interpretation of results data analysis

Interpretation of results data analysis using Altman Z-score, Springate and Zmijewski model as follows:

Table 4.4 Interpretation of Results Data Analysis Altman Z-score, Springate, and Zmijewski model PT. Blue Bird, Tbk

Year	Altman Z-score	Springate	Zmijewski
2011	Bankrupt	Good	Good
2012	Bankrupt	Good	Good
2013	Bankrupt	Good	Good
2014	Grey Area	Good	Good
2015	Good	Good	Good
2016	Good	Good	Good

Resources : Secondary data 2011-2016 processed by 2017

4.2.1 Altman model.

Based on the data of table calculation of Altman, a bankruptcy prediction PT Blue Bird, Tbk 2011-2016 period shows that there is a Z-score value fluctuating in each year. The highest value of the Z-score is in the 2016 with 3.48 (the value of the Z-score > 2.6

company in good condition), working capital against total assets increase, increasing the balance of profits not yet determined their use and the book value of equity, the company is able to meet its obligations, fixed assets owned enough to meet future losses. The lowest value of the Z-score is in 2012 with the value of the Z-score of 0.56 (the value of Z" < 1,1 bankrupt condition company), the low value of the magnitude of the total value of equity, debt, net working capital owned low, rising short-term debt will have problems in meeting short-term obligations. Overall, the predicted bankruptcy of PT Blue Bird, Tbk 2011-2016 period using Altman Z-score model indicates the condition of the grey area. The company should improve the economic condition of the company to avoid bankruptcy, observing the dynamics of market development continuously, launching products services according to the needs and desires for consumers, carrying out activities proper marketing, executing the program efficiency to increase competitiveness, as well as improve the quality of service to consumers.

4.2.2 Springate model.

Based on the data of table calculation Springate, the prediction bankruptcy in PT Blue Bird, Tbk 2011-2016 period is suggested that there is an S-score value that fluctuates each year. The fluctuating

performance of corporate finance is shown with low values of the ratio of the WCTA and EBITTA that is the one of the causes of the decline in the company's performance. The company's difficulty in getting a return accompanied by rising debt. The management must manage return debt amount and sources of income of the company. The highest value of the S-score are in the year 2015 with 1.51 (S-score > 0.862 good condition company), the accession of all financial ratios except for working capital to total assets, and the highest ratio is at a ratio of earnings before tax against debt well, shows the company's ability meet the current liabilities of the profit obtained quite well. The lowest value of the S-score in 2012 with a value of 0.92 (S-score > 0.862 good condition company). Overall, the prediction of bankruptcy in PT Blue Bird, Tbk 2011-2016 period using Springate model shows that company is in good condition.

4.2.3 Zmijewski model.

Based on the data of table calculation Zmijewski, the prediction of bankruptcy in PT Blue Bird, Tbk 2011-2016 period, it is showed that there were X-score value that fluctuates each year. Net profits ratio to total assets to see his company gained the advantage of low rated. The management must manage its revenue sources by increasing the return target certain period income, reducing the costs that aren't too prioritized. The highest X-score

of the value is in 2012 with -0.272 (X-score < 0 good conditions company). In 2016 X-score low, counting to -2.564 (X-score < 0 good condition company). The company's condition is said to be getting good or getting away from potentially bankrupt. Overall, the prediction of bankruptcy in PT Blue Bird, Tbk 2011-2016 period using Zmijewski model shows that company is in good condition.

Research results in accordance with the theory stated by Yulianthini, et al (2016) there are currently a variety of analysis tools to predict the condition of financial distress a company, some of which are models on Altman, Springate, and Zmijewski. Based on the results of the analysis using model calculation of Altman, Springate, and Zmijewski there is a difference of the results analysis due to differences over the value of the variable, financial ratios are used to measure the level of the financial difficulties of the company.

Based on table 4.4 result analysis of PT Blue Bird, Tbk 2011-2016 using the model of Altman Z-score shows that the company's bankrupt condition, is in grey area, and good. The company has a low profitability that means not being able to manage its assets effectively and efficiently in generating profits. This study supports the previous research (Yulianthini, et al 2016) based on the model of Altman of the five telecommunication companies

researched that there is one company experienced a grey area or prone to bankruptcy, one company in the good conditions, and the three companies experiencing financial distress conditions.

Based on the analysis of Springate model in PT Blue Bird, Tbk was included in good condition despite experiencing fluctuating every year. This study supports previous research (Yulianthini and Wirakusuma, 2014) based on the model of overall results Springate that PT. Fast Food Indonesia, Tbk is in good condition.

Based on the analysis using Zmijewski model in PT Blue Bird, Tbk was included in good condition despite experiencing fluctuating every year. This study supports previous research (Yulianthini and Wirakusuma, 2014) based on the model of overall results Zmijewski that PT. Fast Food Indonesia, Tbk is in good condition.

5. CONCLUSIONS

Based on the research in PT Blue Bird, Tbk 2011-2016 using Altman, Springate, and Zmijewski model then the conclusion given the author of:

- a. Analysis of bankruptcy using Altman Z-score model in PT Blue Bird, Tbk 2011-2016 period shows that there are fluctuating of Z-score on each year. In 2016 values Z" became the highest rated 3,48 on research (the value of Z" $> 2,6$ good condition company). The value of the Z" in 2012 with the lowest rated 0,56 on research (the value of Z" $< 1,1$ bankrupt condition company). Overall, the prediction of bankruptcy in PT Blue Bird, Tbk

- 2011-2016 period using Altman Z-score model indicates that companies are in conditions of grey area.
- b. Analysis of bankruptcy using Springate S-score model in PT Blue Bird, Tbk 2011-2016 shows that there are fluctuating of S-score on each year. The value of S-score is the highest in 2015 with a value 1,51 (S-score > 0,862 good condition company). The lowest value of S-score is in 2012 with a value of 0,92 (S-score > 0,862 good condition company). Overall, the prediction of bankruptcy in PT Blue Bird, Tbk 2011-2016 period using Springate model shows that the company is in good condition.
 - c. Analysis of bankruptcy using Zmijewski X-score model in PT Blue Bird, Tbk 2011-2016 periode shows that there are fluctuating of X-score in each year. The highest value of X-score in 2012 with – 0,272 (value X-score < 0 good conditions company). The lowest value of X-score in 2016 is – 2,564 (value X-score < 0 good conditions company), that show the conditions of the company which is said to be getting good or getting away from potentially bankrupt. Overall, the prediction of bankruptcy in PT Blue Bird, Tbk 2011-2016 period using Zmijewski model shows that the company is in good condition.
- a. Recommended to the management of the company that can increase the working capital of the company. Net working capital is important to determining the degree of liquidity of the company. Some of the ways it can be done to increase working capital, among others, the addition of the balance of the profit not specified its use, sale of fixed assets which are not used, the sale of stocks, bonds and securities that can be profitable.
 - b. Recommended for companies improve profits as well as being able to reduce the debt. Increased revenue gives confidence in investors and stakeholders that the company has a high trust of society through service provided.
 - c. Recommended for the company, the results of calculation Altman Z-score model is bankruptcy , grey areas and good, companies must conduct socialization, communication, as well as coaching to employees in order to be right on target in product development the service can increase the value of the company's revenue. The results of the calculation Springate and Zmijewski model good condition yet companies should lower their debt levels so that the company's operations can be more efficient.
 - d. Recommended for the Government strengthens regulations related to conventional transportation and online-based transportation.

6. RECOMMENDATIONS

The results of the analysis of bankruptcy in PT Blue Bird, Tbk 2011-2016 period using Altman, Springate, and Zmijewski model shows that PT. Blue Bird, Tbk predicted on condition of grey area/good. The third model shows the result of each model of bankruptcy that tends to be fluktuatif. Following the advice given by the researchers based on the results of the analysis are:

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