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Abstract: For the past three years, the evolution in retail industry is growing but at slower pace. In digital era when there is a huge impact of online business to the society shopping trend, this friction impact financial performance and company survival. That is why we need to analyze to predict the bankruptcy. There are several method to predict the possibility of bankruptcy for a company and this research used Altman Z-score Model, Grover Model and Springate S-score Model. The Aim of this research is to predict the bankruptcy in retail companies by using the three different Method. The data used in this research are audited financial report from 2014-2018. The Result of this research shows that when we used Altman Z-score, all of the companies are not classified bankrupt except for PT Matahari Putra Prima in 2017. The same result were obtained when we used Grover Model, while Springate S-score Model shows that the same company is classified bankrupt not only in 2017 but also in 2018.

Keywords: Risk, Bankruptcy, Altman Z-score, Springate S-score Model, Grover Model and Retail

1. Introduction

In 2018, Indonesia’s economy grew by 5.17%, while inflation remained at 3.13%. It was due to the increase in investment and exports. In recent years, consumer-based companies have been encountering a number of challenges such as declining consumption rate as well as decelerated and stagnated retail sales trends. The low level of domestic consumption compared to the overall domestic economic growth rate put Indonesia’s retail industry under considerable pressure. PT Matahari Department Store Tbk, PT Matahari Putra Prima Tbk, and PT Ramayana Lestari Sentosa Tbk closed many of its outlets due to the poor performance of the outlets in dealing with this problem.

As digital technology develops, in which the use of smartphone is increasingly widespread, the access to cyberspace has become even easier. This condition has led to an increasing number of online sales service businesses, such as e-commerce or market places. This shift in public shopping trends resulted in a number of retail stores going bankrupt. Declining sales must be anticipated by every company, because if not handled correctly, it will trigger a bankrupt situation. Retail companies must prepare themselves and keep the stability of their business, in order to survive in the future. Financial distress is a condition of pre-bankruptcy that occurs in companies. It can be identified through several indicators such as, undergoing a decrease in fulfilling its obligations, losing more than 50% of paid-in capital and failing to divide the dividend for 3 years due to various factors, namely economy problem, natural disasters, and management policy errors. Financial statements can be used as a measure of a company’s bankruptcy risk through conducting a ratio analysis towards financial statements published by the company. There are several models of bankruptcy analysis, such as the Zmijewski Model, the Springate S-Score Model, and the Altman Z-Score Model. (I. Altman, 1968)

This research applies Altman Z-Score analysis, Grover Model analysis and Springate S-Score analysis. The Altman Z-Score analysis uses five financial ratios that can predict the bankruptcy of a company. These five ratios consist of working capital towards total assets, retained earnings towards total assets, earnings before interest and
taxes (EBIT) towards total assets, stock market value towards total value debt and sales of total assets, (Altman, Iwanicz-Drozdowska, Laitinen, & Suvas, 2017). The Grover Model is a derivative model of the Altman Model through conducting reassessment. Meanwhile, the Springate S-Score is also a derivative of the Altman Z-Score. Initially, it applied 19 popular financial ratios. However, after retesting, Springate selected 4 ratios to be applied in determining the criteria for healthy companies, potentially bankrupt companies, and bankrupt companies. Each applied model has different accuracy rates and has significant results. Researches on bankruptcy prediction models in Indonesia have been extensively conducted. Those researches generally applied the Altman model. Meanwhile, other bankruptcy prediction models are still rarely used. (Barboza, Kimura, & Altman, 2017)

There are many researches that have been conducted by applying these three models of analysis. Several researches, such as those conducted by Husein & Pambekti, displays that the Altman model, the Zmijewski model, Springate model, and Grover model can be applied to predict financial distress. However, the Zmijewski model is the most suitable model to be applied for financial distress prediction since it has the highest rate of significance compared to other models. The Zmijewski model is applied to emphasize on leverage ratios as an indicator of financial difficulties (Husein & Pambekti, 2015)

Research conducted by Harsono on delisted companies from 2011 to 2015 displays that Altman is the best bankruptcy prediction model since it has the accuracy rate of 71.43% with the error rate of 14.29%, which is lower than Springate. Springate has an accuracy rate of 71.43%, with an error rate higher than Altman, which is 28.57%. Grover and Zmijewski occupy third and fourth place respectively in overall accuracy and in predicting bankruptcy rates. (Yoewono, 2018)

The Total Assets of PT Matahari Department Store Tbk displayed an increase from 2014 to 2017. The cost of goods sold and operating expenses of PT. Matahari Department Store Tbk, also experienced an increase from 2014 to 2018. The increase in cost of goods sold was consistent with sales growth. Meanwhile, the company’s net earnings increased from 2014 to 2016 and decreased from 2017 to 2018. This was caused by the decline in of the investments value in equity instruments and the rise in operating expenses.

In 2017, PT Matahari Putra Prima Tbk was declared unable to meet its short-term obligations and had a low level of liquidity. It was due to the fact that company’s current debt was greater than the company’s current assets. PT Matahari Putra Prima Tbk’s sales rate was decreased because of challenging market conditions. Cost of goods sold tended to increase. In the case of net earnings/loss, there was an increase from 2014 to 2016. While in 2017, the company experienced a decline from an earnings of Rp. 38,483,000.- to a loss of Rp. 1,243,414,000,000.- and in 2018 a loss of Rp. 898,272,000,000.-

PT Ramayana Lestari Tbk’s sale was fluctuated, while the cost of goods sold and operating expenses was increased from the previous year. The ratio between sales and total expenses caused the low margin and the earnings gained was not optimal.

2. Theoretical Review and Hypotheses
2.1. Theoretical Review
2.1.1. Risk Management

Risk occurs as a result of uncertain conditions. There are various types of risk, such as accident, loss due to exchange rate fluctuations, changes in interest rates, etc. Risk can be defined as an adverse event. Risk can also be interpreted as a possibility of deviation from the expected outcome. The tools to measure deviations are the standard deviation and probability. (March & Shapira, 1987)

Enterprise risk management is an integrated comprehensive framework, to manage credit risk, market risk, transfer risk to maximize the enterprise’s value (Lam, 2017). Organizational risk management has a number of elements such as mission identification, risks and uncertainties assessment, risks identification and measuring, risk management, as well as risk funding. Enterprise risk management is a process in the context of organizational risk management (“Enterprise Risk Management-Integrated Framework,” 2015)
2.1.2. Bankruptcy

The bankruptcy prediction model describes a trend of behaviors for certain ratios. Bankruptcy is also referred to as company liquidation or insolvency. Liquidation indicates that the company’s revenue cannot cover costs. It means that the company’s earning rate is less than the cost of capital or the current value of the company’s cash flow is less than the liability. According to Altman (1973) bankruptcy is a situation where a company is declared legally bankrupt (Agarwal & Patni, 2019).

2.1.3. Altman Z-Score Model

The Altman Z-Score Model is a model formed from a combination of financial ratios (E. I. Altman, 1968). Those ratios are as follows:

- Working Capital towards Total Assets (X1)
  The ratio of Working Capital towards Total Assets is one of the liquidity ratios that measures the company’s ability to fulfill the company’s short-term obligations. Working capital is the difference between current assets and current liabilities. The results of this ratio can be negative if current assets are smaller than current liabilities.

- Retained Earnings towards Total Assets (X2)
  The ratio of Retained Earnings towards Total Assets is the ratio that measures the company’s ability to generate retained earnings from total company assets. Retained earnings, which is reported in the balance sheet indicates the amount of company’s income that is not paid to the shareholders in the form of dividends.

- EBIT towards Total Assets (X3)
  The ratio of EBIT towards Total Assets is the ratio that measures the company’s ability to generate earnings from the assets used or also known as company’s profitability. Earnings is calculated by the amount of earnings before deducting interests and taxes, which then compared to total assets. EBIT is earnings before interest and taxes or commonly referred to as operational earnings.

- Stock Market Value towards Total Debt (X4)
  The ratio of stock market value to total debt is the ratio that measures company’s ability to fulfill the obligations of the stock market value. The stock market value is obtained by multiplying the total shares outstanding with the market price per shares.

- Sales towards Total Assets (X5)
  The ratio of sales towards total assets is the ratio that measures the company’s ability to generate sufficient business volume compared to investment in total assets. This ratio describes the efficiency of management in utilizing the company’s overall assets to generate sales and gain earnings. (Siddiqui, 2012)

2.1.4. Springate S-Score Model

Gordon L. V Springate (1978) conducted a research to predict bankruptcy by producing a bankruptcy prediction model, which was made based on the Altman Z-Score Model’s procedure. This bankruptcy prediction model is known as the Springate S-Score Model. The Sprigate S-Score Model applies 4 financial ratios, which are selected from 19 financial ratios that have been reviewed in various literatures. This model’s formula is as follows:

\[ Z = 1.03 \ A + 3.07 \ B + 0.66 \ C +0.4 \ D \ .................................................( 3) \]

which:

\[ A = Working \ Capital/Total \ Asset \]

\[ B = Net \ Earning \ before \ Interest \ and \ Taxes/Total \ Asset \]
\[ C = \text{Net Earning before Taxes/Current Liabilities} \]
\[ D = \text{Sales/Total Asset} \]

The Springate model classifies the companies with \( Z > 0.862 \) as companies with no potential bankruptcy, while companies with \( Z < 0.862 \) as unhealthy and potentially bankrupt companies (Purnajaya & Merkusiwati, 2014).

### 2.1.5. Grover Model

The Grover model is a model created by conducting redesign and reassessment towards the Altman Z-Score Model. Jeffrey S. Grover used samples that consistent with the Altman Z-score Model in 1968, adding thirteen new financial ratios. The number of samples used was 70 companies with 35 companies that went bankrupt and 35 companies that did not go bankrupt from 1982 to 1996. This research produced the following functions:

\[
\text{Score} = 1.650X1 + 3.404X3 - 0.016\text{ROA} + 0.057
\]

which:

\[ X1 = \text{Working capital/Total assets} \]
\[ X3 = \text{Earnings before interest and taxes/Total assets} \]
\[ \text{ROA} = \text{net income/total assets} \]

The Grover model classifies companies that are bankrupt as the companies that score less than or equal to -0.02 (Score \( \leq -0.02 \)), while companies that are not bankrupt are the companies that score more than or equal to 0.01 (Score \( \geq 0.01 \)) (Pakdaman, 2018).

### 3. Method of Research

**Types of Research**

This research is a descriptive research type. The research’s sample is 3 retail companies which financial statements have been audited.

The companies selected as samples are the companies with following criteria:

1. Are registered in the Indonesia Stock Exchange (IDX) until 2018.
2. Publish audited financial statements.
3. Sell a variety of merchandise including shoes, clothing, beauty products, jewelry, etc.

**The Retail Companies’ data as the research samples**

<table>
<thead>
<tr>
<th>No</th>
<th>Code</th>
<th>Company’s Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LPPF</td>
<td>PT. Matahari Department Store Tbk,</td>
</tr>
<tr>
<td>2</td>
<td>MPPA</td>
<td>PT. Matahari Putra Prima Tbk,</td>
</tr>
<tr>
<td>3</td>
<td>RALS</td>
<td>PT. Ramayana Lestari Sentosa Tbk,</td>
</tr>
</tbody>
</table>

Source: [www.idx.co.id](http://www.idx.co.id)
Data Source

Primary data of this study are data obtained directly from the company’s publication data (www.idx.co.id). Meanwhile, the secondary data are the financial statements published by the Indonesia Stock Exchange (IDX) through its official website at http://www.idx.co.id. The data used in this research are the 2014 - 2018 audited financial statements.

Data Collecting Method

The data collection in this research is conducted using the method of collecting a number of data and observing financial reports derived from the IDX publications and other sources related to this research.

4. Result and Discussion

4.1. Result

4.1.1. Altman Model (Z-Score)

The Altman Model (Z-Score) is used as an assessable control instrument on the financial status of a company which experiencing a financial distress. (Hájek, Zhunissova, Čábelová, & Baidildina, 2017). The form of this model is a linear equation consisting of a combination of financial ratios such as, Working Capital to Total Assets (X1), Retained Earnings to Total Assets (X2), EBIT to Total Assets (X3), Market Value of Shares to Total Debt (X4), and Sales to Total Assets (X5), as expounded below:

\[
Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5
\]

Based on the calculation of the ratios that form the equation above, the generated Z-Score value for PT. Matahari Department Store Tbk, PT. Matahari Putra Prima Tbk, and PT. Ramayana Lestari Sentosa Tbk from 2014 to 2018 is as displayed in the following table:

<table>
<thead>
<tr>
<th>Company’s Name</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT Matahari Department Store Tbk</td>
<td>3.64</td>
<td>6.86</td>
<td>2.07</td>
<td>0.29</td>
<td>0.63</td>
</tr>
<tr>
<td>PT Matahari Putra Prima Tbk</td>
<td>6.67</td>
<td>4.63</td>
<td>3.39</td>
<td>1.39</td>
<td>3.19</td>
</tr>
<tr>
<td>PT Ramayana Lestari Sentosa Tbk</td>
<td>5.56</td>
<td>5.03</td>
<td>6.63</td>
<td>6.66</td>
<td>7.16</td>
</tr>
</tbody>
</table>

Source: Processed Data

Note:
- **= Bankrupt (Z ≤ 1.81)**
- **= Potentially Bankrupt (1.81 < Z ≤ 2.99)**
- **= Healthy (Z > 2.99)**
The table above displays that PT Matahari Department Store Tbk, from 2014 to 2018, was in the healthy category, with the Z-Score that fluctuated and tended to decrease. In 2015, there was a significant increase from 13.64 to 16.86, and began to decrease from 2016 until 2018 respectively at 12.07, 10.29, and 7.63. This condition was caused by the low average growth in sales at each store or same store sales growth (SSSG). In 2017 and 2018, the company’s net earnings decreased due to the decline in investments value of equity instruments at PT. Global Ecommerce Indonesia, which PT. Matahari Department store has 19.62% share ownership in Mataharimall.com worth of Rp. 769.77 Billion.

PT Matahari Putra Prima Tbk had Z-Score that tended to decrease from 2014 to 2017. In 2017, the company even crossed the threshold of bankrupt category with the Z-Score of 1.39, but managed to recover and emerged from the bankrupt category in 2018 with the Z-Score of 3.19. PT. Matahari Putra Prima had the Z-score of 1.39 in 2017, which was within in the bankrupt category. This condition occurred because, as of the end of December 2017, there was a sizable amount of difference between company’s cash and cash equivalents of merely Rp. 373 billion with the Rp. 3.88 trillion due liabilities, most of which are in the form of bank debt and business debt. Improvements were successfully carried out in 2018 by implementing efficiency strategies such as evaluating the sale’s coverage area, converting several outlets into supermarkets, controlling operational expenses, expanding more carefully, and choosing items to sell more selectively.

Unlike the two companies mentioned above, PT Ramayana Lestari Sentosa Tbk had Z-Score which tended to increase from 2007 to 2018 and always remained in the healthy category. The Z-Score of PT Ramayana Lestari Sentosa Tbk decreased in 2015 to 5.03 from 5.56 in the previous year. Then, from 2016 to 2018 the Z-Score continued to increase, 6.63 in 2016, 6.66 in 2017 and 7.16 in 2018. The Z-score of PT. Ramayana Lestari Sentosa Tbk, which was stable and tended to increase, is the effect of the policy of reducing the supermarket business units (closing down 16 loss-making supermarket division outlets), which had been conducted since 2016 as an effort to limit the decrease in net earnings. This policy is considered to be relatively successful based on several factors such as, significant decrease in operational costs, cuts in sales costs up to Rp. 29.9 billion and reduction of losses in supermarket division from Rp. 71 billion to Rp. 25.8 billion. PT. Ramayana Lestari Sentosa Tbk was also keen in identifying opportunities in fashion retail products, especially in consignment goods, where the company was able to earn a commission of Rp. 71.9 billion in 2017. Therefore, in early 2018, PT. Ramayana Lestari Sentosa Tbk launched a new type of outlet, namely Ramayana Prime. This outlet is different because not only it offers retail fashion products but also various lifestyle products. In addition, this outlet is also able to provide more accessibility for the customers in making payments by collaborating on the e-Money platform (e-Wallet DANA).

Overall, the Altman Z-Score Model displays that PT Matahari Department Store Tbk, PT Ramayana Lestari Sentosa Tbk, and PT Matahari Putra Prima Tbk still have the opportunities to continue progressing. This can be observed through the Z-Score. Despite having the Z-scores which tend to decrease, PT. Matahari Department Store Tbk and PT. Matahari Putra Prima Tbk are still in the category of not bankrupt (2.99). More particularly, PT. Matahari Putra Prima Tbk, which crossed the threshold of bankrupt category in 2017 with the Z-score of 1.39, but managed to return to the not bankrupt or healthy category in 2018 with the Z-score of 3.19.

4.1.2. Sprigate S-Score Model

Table 2
Sprigate S-Score Model of Bankruptcy Prediction Data
PT Matahari Department Store Tbk, PT Matahari Putra Prima Tbk, and
PT Ramayana Lestari Sentosa Tbk.
2014 – 2018 Period

<table>
<thead>
<tr>
<th>Company’s Name</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT Matahari Department Store Tbk</td>
<td>3.16</td>
<td>3.34</td>
<td>3.14</td>
<td>2.77</td>
<td>2.20</td>
</tr>
</tbody>
</table>
The table above displays that PT Matahari Putra Prima Tbk was a bankrupt company in 2017 and 2018. Since 2014, company’s S-Score continually decreased until 2017, when it crossed the threshold of bankrupt categories criteria based on the Sprigate S-Score Model with the S-Score of -0.26. However, in 2018, despite still remaining in the bankrupt category, the company’s S-Score increased to -0.01.

Meanwhile, the S-Score of PT Matahari Department Store Tbk tended to decrease, despite still remaining in the healthy category. The company’s S-Score of 3.16 in 2014 increased to 3.34 in 2015 and then continually decreased from 2016 to 2018 at 3.14, 2.77, and 2.20 respectively.

On the contrary, PT Ramayana Lestari Sentosa Tbk had the S-Score that tended to increase despite being fluctuated. In 2015, the S-Score decreased to 1.31 from the previous year at 1.38. It then increased to 1.45 in 2016, decreased again to 1.43 in 2017, and finally increased again to 1.72 in 2018.

Overall, the Sprigate S-Score Model displays that PT Matahari Department Store Tbk and PT Ramayana Lestari Sentosa Tbk have better opportunities to continue progressing than PT Matahari Putra Prima Tbk.

4.1.3. Grover Model

Table 3
Grover Model of Bankruptcy Prediction Data
PT Matahari Department Store Tbk, PT Matahari Putra Prima Tbk, and PT Ramayana Lestari Sentosa Tbk
2014 – 2018 Period

<table>
<thead>
<tr>
<th>Nama Perusahaan</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT Matahari Department Store Tbk</td>
<td>1.93</td>
<td>2.03</td>
<td>1.95</td>
<td>1.66</td>
<td>1.19</td>
</tr>
<tr>
<td>PT Matahari Putra Prima Tbk</td>
<td>0.79</td>
<td>0.49</td>
<td>0.34</td>
<td>-1.36</td>
<td>0.84</td>
</tr>
<tr>
<td>PT Ramayana Lestari Sentosa Tbk</td>
<td>0.92</td>
<td>0.90</td>
<td>0.97</td>
<td>1.02</td>
<td>1.21</td>
</tr>
</tbody>
</table>

Source: Processed Data

Note:
- Bankrupt (Score ≤ -0.02)
= Potentially Bankrupt (-0.02 < Score ≤ 0.01)

= Healthy (Score > 0.01)

The table above displays that PT Ramayana Lestari Sentosa Tbk was in the healthy category with the Score that tended to increase from 2014 to 2018. The company’s Score at 0.92 in 2014 decreased to 0.90 in 2015, then continually increased from 2016 until 2018 at 0.97, 1.02 and 1.21 respectively.

The Matahari Department Store Tbk was also in the healthy category despite having the Score that tended to decrease. The company’s Score in 2014 was at 1.93, then increased to 2.03 in 2015 and continually decrease from 2016 to 2018 at 1.95, 1.66 and 1.19 respectively.

Whereas, PT Matahari Putra Prima Tbk had the Score that tended to decrease and finally it crossed the threshold of the bankrupt category in 2017. However, then managed to recover in 2018. In 2014 the company’s Score was at 0.79, which it then continually decreased for over the next 3 years 0.49, 0.34, and reached its lowest point at -1.36 in 2017. In 2018, the company’s Score increased to 0.84, thus the company returned to the healthy category.

Overall, Grover Model displays that PT Matahari Department Store Tbk, PT Ramayana Lestari Sentosa Tbk, and PT Matahari Putra Prima Tbk still have opportunities to continue progressing, even though PT Matahari Putra Prima Tbk had experienced bankruptcy with the Score of -0.02 in 2017.

5. Conclusion

Based on the results and discussion of the study, it can be concluded that:

1. The Altman Z-Score Model displays that PT Matahari Department Store Tbk, PT Matahari Putra Prima Tbk and PT Ramayana Lestari Sentosa Tbk still have opportunities to continue progressing. Despite being classified as bankrupt company with the Z-Score of 1.39 in 2017, PT. Matahari Putra Prima Tbk is again in the category of not bankrupt or healthy with a Z-Score of 3.19 in 2018.

2. The Sprigate S-Score Model displays that PT Matahari Department Store Tbk and PT Ramayana Lestari Sentosa Tbk have bigger opportunities to continue progressing compared to PT Matahari Putra Prima Tbk.

3. The Grover Model displays that PT Matahari Department Store Tbk, PT Ramayana Lestari Sentosa Tbk, and PT Matahari Putra Prima Tbk still have opportunities to continue progressing. Despite being classified as bankrupt company with Score -1.36 in 2017, PT Matahari Putra Prima Tbk successfully returned to the category of not bankrupt or healthy with the Score of 0.84 in 2018.

6. References


