FINANCIAL ANALYSIS OF RETAIL COMPANIES USING THE ALTMAN, SPRINGATE, ZMIJEWSKI, FULMER, AND GROVER BANKRUPTCY PREDICTION MODELS
(Case Study of Retail Companies Listed on the Indonesia Stock Exchange for the Period 2019–2020)

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Abstract: Bankruptcy analysis is a method to determine the company's financial condition using a bankruptcy prediction model. The purpose of this study is to determine the financial condition of retail companies in Indonesia listed on the Indonesia Stock Exchange (IDX) for the 2019–2020 period, which is measured using the Altman Z-Score, Springate, Zmijewski, Fulmer, and Grover bankruptcy prediction models. The type of research used is quantitative with a descriptive approach. The sample used is 28 retail companies published by the Indonesia Stock Exchange (IDX) for the 2019–2020 period. The data collection technique used is the documentation technique, in the form of annual financial reports of retail companies which are downloaded through www.idx.co.id. The results of data analysis showed that the bankruptcy prediction model of Altman, Springate, Zmijewski, Fulmer, and Grover gave different results, due to differences in the ratio variables used. Several retail companies are predicted to go bankrupt, due to the poor financial performance of the company, causing losses. However, most retail companies are still able to maintain a balance in financial performance and can minimize the risk of bankruptcy during the Covid-19 pandemic. For the company to avoid bankruptcy, the company must manage its financial performance as well as possible, such as regulating the level of sales, company liabilities, company assets, profit before taxes and interest, net income, retained earnings, receivables turnover, working capital, as well as minimizing operating costs company.

Keywords: Altman, Springate, Zmijewski, Fulmer, Grover, bankruptcy

INTRODUCTION

In Indonesia, retail companies continue to grow and develop, apart from creating jobs for the community, retail companies also contribute greatly to

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Indonesia's economic growth. However, the Covid-19 pandemic has made retail companies face many losses, so they chose to close their business, due to declining sales volume. The Government of the Republic of Indonesia has ratified the Large-Scale Social Restrictions (PSBB) strategy to the public, this harms the sustainability of retail companies in Indonesia, where the prolonged Covid-19 pandemic has forced several shopping centers to be closed, resulting in the retail sector's revenue sinking to 12 trillion in 2020. There are various obstacles experienced by retail companies during the Covid-19 pandemic, this disrupts the company's operating activities, resulting in a decrease in revenue. Several retail companies that experienced a drastic decrease in revenue, even to the point of having to bear a lot of losses, were PT Hero Supermarket Tbk., PT Matahari Department Store Tbk., Ramayana Lestari Sentosa Tbk., PT MAP Aktif Adiperkasa Tbk., and PT Mitra Adiperkasa Tbk. (Nurhaliza, 2021). Where PT Hero Supermarket Tbk. decided if it wanted to disband all Giant outlets throughout Indonesia, this policy had to be carried out because the company would make adjustments to the right business strategy in dealing with current conditions. PT Matahari Department Store Tbk. also intended to close several of its outlets in various regions, because the company's operational activities continue to burden PT Matahari Department Store Tbk. finances in general (Mulyana, 2021). The restrictions on people's mobility, supported by the decline in public consumption and purchasing power, also adversely affected the sales growth of retail companies which declined drastically.

Based on the growth of the wholesale and retail trade business in Indonesia in 2020 is in an unfavorable condition, due to a decline in the growth in buying and selling activities since the Covid-19 pandemic. Where the growth of the wholesale and retail trade industry fell -7,57% in 2020. As a result of a continuous decline in sales, it will trigger the occurrence of bankruptcy in a company. Bankruptcy is a condition where the company is considered unsuccessful (failed) in carrying out its operational activities to earn a profit. Companies need to analyze bankruptcy predictions to avoid or anticipate the possibility of bankruptcy. In addition, an analysis of the prediction of bankruptcy needs to be carried out as a reference to the management, company owners, or for parties outside the company (investors and creditors) in taking actions or decisions.

Bankruptcy can be predicted by measuring the level of company financial through bankruptcy prediction models that have been developed by researchers, including Altman (1968), Springate (1978), Zmijewski (1984), Fulmer (1984), and Grover (2001). The reason the researcher uses the five bankruptcy prediction models is that research on bankruptcy prediction for retail companies in Indonesia that uses various bankruptcy prediction models is still rarely conducted, especially in the use of the Fulmer and Grover models. The level of accuracy of the Altman, Springate, Zmijewski, Fulmer, and Grover models is also high, so that it can be used as a medium to estimate the bankruptcy of certain go public retail companies in Indonesia. The Altman Z-Score (1968) model is an analysis to estimate the potential for bankruptcy of the company using five kinds of financial ratios, including liquidity, profitability, solvency, leverage, and financial performance. Over time, testing the Altman model continues to expand its application, thus giving rise to the modified Altman Z-Score model (1995) with a more flexible application, which can be applied to various types of companies, and has an accuracy rate of 95%. The Springate model (1978) is a bankruptcy prediction method that applies profitability ratios, working capital ratios to total assets, and asset management ratios. The results of the Springate model produce an accuracy rate of 92,5%. Zmijewski (1984) model is a bankruptcy prediction model that applies profitability, leverage, and liquidity ratios in measuring the company's financial performance. From the results of the Zmijewski model, the accuracy level is 94.9%. The Fulmer model (1984) is a bankruptcy prediction model by evaluating 40 financial ratios. The Fulmer model has a fairly high level of accuracy, which is 98% in grouping companies one year before bankruptcy. Meanwhile, 81% of companies have been bankrupt for more than one year. Fulmer's (1984) bankruptcy prediction model is an analysis that uses activity management ratios, profitability ratios, liquidity ratios, and debt management ratios. Then the Grover (2001) model is a redesign of the Altman Z-Score bankruptcy prediction model which adds to the ROA ratio and is considered very influential on bankruptcy prediction using indicators of profitability ratios and liquidity ratios. Research from Grover's bankruptcy prediction model produces a fairly high level of accuracy namely 97,7%.

Previous research related to the Altman Z-Score bankruptcy prediction model when predicting company bankruptcy produces an accuracy rate of

71.6%–89.5% studied by (Arini, 2021; Mulyani et al., 2018; Muzanni & Yuliana, 2021) Previous research predictive model Springate bankruptcy has an accuracy rate of 60%–83.33% which was studied by (Arini, 2021; Mulyani et al., 2018; Muzanni & Yuliana, 2021). Previous research on the Zmijewski bankruptcy prediction model resulted in an accuracy rate of 60%–87% which was studied by (Mulyani et al., 2018; Muzanni & Yuliana, 2021). Previous research on the Fulmer model in predicting corporate bankruptcy resulted in an accuracy rate of 71.6%–100% (Mulyani et al., 2018; Parquinda & Azizah, 2019). Whereas in previous research, Grover's bankruptcy prediction model has an accuracy rate of 72.22%–80% % (Mulyani et al., 2018; Parquinda & Azizah, 2019). In research (Barry, 2019) using the Springate and Altman Z-Score techniques for retail companies on the Indonesia Stock Exchange (IDX) in 2012–2016 resulted that OKAS, KONI, INTA, and RIMO companies would potentially experience bankruptcy. In previous research (Viciwati, 2020) using the Altman Z-Score method and Zmijewski revealed that there were seven retail companies on the Indonesia Stock Exchange (IDX) during the 2015–2017 period predicted to experience bankruptcy, namely ACII, AMRT, HERO, KOIN, CSAP, MAPI, and MPPA. The purpose of this study is to find out the financial condition of retail companies listed on the Indonesia Stock Exchange (IDX) for the period 2019-2020 before and during the Covid-19 pandemic as measured by applying the Altman Z-Score bankruptcy prediction model, Springate, Zmijewski, Fulmer, and Grover.

Bankruptcy occurs when the company does not carry out its operational activities properly, resulting in a decrease in the company's financial performance. The internal factors that trigger the occurrence of bankruptcy are caused by an incompetent and efficient management decision system so it affects the policies taken. Meanwhile, external factors were caused by tight competition, difficulties in finding raw materials, a decline in demand for the products produced, declining prices in the market, and unfavorable economic conditions both domestically and internationally. The study of bankruptcy prediction is a study that is used to anticipate the possibility of bankruptcy experienced by the company due to financial problems and is used as an alarm before bankruptcy occurs. The bankruptcy prediction model is used as a tool to know or predict the future status of the company, which uses a combination of various financial ratios.

Altman model (Z-Score) is a study that is implemented in calculating the potential for bankruptcy of a company, using various ratios in financial statements, such as liquidity, profitability, and solvency ratios, with an accuracy rate of 80% (Fahma, 2019). According to this description, the following hypothesis is proposed:

H1: The financial condition of retail companies listed on the Indonesia Stock Exchange (IDX) in the 2019–2020 period can be measured using the Altman Z-Score bankruptcy prediction model.

Model Springate (S-Score) namely a bankruptcy prediction method that uses several financial ratios, such as profitability, liquidity, and asset turnover ratios. The Springate model can be used as a method for estimating bankruptcy which has an 80% accuracy rate (Muzanni & Yuliana, 2021). From this description, the following hypothesis is proposed:

H2: The financial condition of retail companies listed on the Indonesia Stock Exchange (IDX) in the 2019–2020 period can be measured using the Springate bankruptcy prediction model.

The Zmijewski model (X-Score) is a bankruptcy prediction method that applies the ratio of profitability (ROA), solvency, and liquidity when assessing the company's financial performance. The Zmijewski model can be used to measure the company's financial level, with an accuracy rate of 100% (Munawarah et al., 2019). According to this description, the following hypothesis is proposed:

H3: The financial condition of retail companies listed on the Indonesia Stock Exchange (IDX) in the 2019–2020 period can be measured using the Zmijewski bankruptcy prediction model.

The Fulmer model (H-Score) is a bankruptcy prediction method that uses various financial ratios, such as profitability, liquidity, solvency, asset turnover ratios, cash flow ratios, and fixed assets. Fulmer's bankruptcy prediction model has an accuracy rate of 98% in grouping companies 1 year before bankruptcy (Parquinda & Azizah, 2019). According to this description, the following hypothesis is proposed:

H4: The financial condition of retail companies listed on the Indonesia Stock Exchange (IDX) in the 2019–2020 period can be measured using the Fulmer prediction model.

The Grover model (G-Score) is a bankruptcy prediction method that is used as a method to determine the level of company financial by using liquidity and profitability ratios, which can determine the financial level of retail companies, with an accuracy rate of 97,% (Munawarah et al., 2019). According to this description, the following hypothesis is proposed:

H5: The financial condition of retail companies listed on the Indonesia Stock Exchange (IDX) in the 2019–2020 period can be measured using the Grover bankruptcy prediction model.

METHOD

This research uses quantitative research with a descriptive approach. According to (Sugiyono, 2017). Descriptive research is conducted to determine the value of the independent variables used, either one or more variables without any comparison or relationship between one variable and another. The type of data used is secondary data obtained from the annual financial statements of retail companies listed on the Indonesia Stock Exchange in 2019–2020. The population in this study are retail trading companies listed on the Indonesia Stock Exchange for the 2019 period-2020. The sampling technique uses a saturated sample technique. Where the saturated sample technique is a sample selection method in which all members of the population are used as research samples (Sugiyono, 2017). The sample used is the retail companies listed on the Indonesia Stock Exchange (IDX) which amounts to twenty-eight companies.

Research Variables and Operational Definitions

This study uses the variables contained in the bankruptcy prediction model Altman, Springate, Zmijewski, Fulmer, and Grover. The operational definition of a variable is an indication of the value of an object or activity that has a certain variation that has been determined by experts so that it can be analyzed or studied which then concludes (Sugiyono, 2017). The variables used include:

1. Altman Model (Z-Score)

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

   a. X1 = Liquidity

Liquidity is the performance of a company in paying off the company's short-term obligations when they fall due. This variable determines the effectiveness of the company to obtain working capital from all assets owned by the company. The formula used is as follows:

$$Liquidity = \frac{Working\ Capital}{Total\ Assets}$$

b. X2 = Profitability

Profitability is the company's performance to get profit or profit. This variable shows the ability of the company's total assets in obtaining retained earnings. The following formula is used:

$$Profitability = \frac{Retained\ Earnings}{Total\ Assets}$$

c. X3 = Profitability

Profitability describes the ability of the company's total assets to earn a profit before interest and taxes are charged, as well as measuring whether the assets owned by the company are used effectively to earn a profit. The formula used is as follows:

$$Profitability = \frac{EBIT}{Total\ Assets}$$

d. X4 = Solvency

Solvency is measuring the company's performance in paying the company's debt. The following formula is used:

$$Solvency = \frac{Book\ Value\ of\ Equity}{Book\ Value\ of\ Debt}$$

The cut-off values for the modified Altman Z-Score model are:

1) If the Z value < 1.1 the company is said to be bankrupt
2) If the value of 1.1 < Z < 2.6 the company is said to be a gray area (not said to be a company experiencing bankruptcy or vice versa).
3) If the Z value > 2.6 the company is said to be in a financially condition.

2. Springate Model (S-Score)

$$S = 1.03\ A + 3.0\ B + 0.66\ C + 0.40\ D$$

a. A = Liquidity

Liquidity is the company's performance to be able to pay off the company's short-term obligations when they fall due. This variable describes the

company's competence to obtain net working capital from the company's total assets. The formula used is as follows:

$$Liquidity = \frac{Working\ Capital}{Total\ Assets}$$

b. B = Profitability

Profitability is the performance of the company's total assets in obtaining profits before paying interest and taxes, as well as measuring the assets owned by the company whether they are used effectively and rationally to generate profits. The formula used is as follows:

$$Profitability = \frac{EBIT}{Total\ Assets}$$

c. C = Profitability

Profitability is the company's financial performance in terms of profit before tax from the current liabilities of a company. The formula used is as follows:

$$Profitability = \frac{EBT}{Current\ Debt}$$

d. D = Asset Turnover

Asset Turnover describes the efficiency of using the company's total assets in obtaining sales, as well as determining the effectiveness of the company to earn revenue. The formula used is as follows:

$$Asset\ Turnover = \frac{Sales}{Total\ Assets}$$

The cut-off values for the Springate model are as follows:

1) If the value of S < 0.82 the company has the potential to face bankruptcy.

2) If the S value > 0.82 the company is categorized as financially.

3. Zmijewski Model (X-Score)

$$X = -4.3 - 4.5X1 + 5.7X2 - 0.004X3$$

a. X1 = Profitability

Profitability or Return on Asset (ROA) shows how the company uses or utilizes its assets in generating profits. The formula used is as follows:

$$Profitability = \frac{Net\ Profit}{Total\ Assets}$$

b. X2 = Solvency

Solvency measures how much company assets can be financed by company debt or how much company debt can affect the company's asset management. The formula used is as follows:

$$Solvency = \frac{Total\ Debt}{Total\ Assets}$$

c. X3 = Liquidity

Liquidity is a current ratio analysis that shows the effectiveness of the company to finance the company's short-term debt with the company's current assets that have matured. The formula used is as follows:

$$Liquidity = \frac{Current\ Assets}{Current\ Debt}$$

The cut off value of the Zmijewski model is as follows:

1) If the score of X > 0 the company has the potential to face bankruptcy.

2) If the score of X < 0 the company is declared in a financially condition.

4. Fulmer Model (H-Score)

H = 5.528 (X1) + 0.212 (X2) +0.073 (X3) + 1.27 (X4) − 0.12 (X5) + 2.335 (X6) + 0.575 (X7) +1.083 (X8) + 0.894 (X9) − 6,075

a. X1 = Profitability

Profitability is a variable that shows the ability of all total assets to obtain retained earnings. The following formula is used:

$$Profitability = \frac{Retained\ Earnings}{Total\ Assets}$$

b. X2 = Asset Turnover

Asset Turnover explains the effectiveness of the company using total assets in obtaining sales, as well as to determine the effectiveness of the company to earn revenue. The formula used is as follows:

$$Asset\ Turnover = \frac{Sales}{Total\ Assets}$$

c. X3 = Profitability

Profitability on this variable is profit before tax which reflects or sees the company's performance in obtaining operating profit without taking into account taxes. The following formula is used:

$$Profitability = \frac{EBT}{Equity}$$

d. X4 = Cash Flow Ratio

The Cash Flow Ratio is used to determine the company's performance in paying the company's total debt with the company's cash flow. The following formula is used:

$$Cash\ Flow\ Ratio = \frac{Cash\ Flow}{Total\ Debt}$$

e. X5 = Solvency

Solvency in this variable is used to calculate the percentage of the company's total assets paid for by the company's debt. The formula used is as follows:

$$Solvency = \frac{Total\ Debt}{Total\ Assets}$$

f. X6 = Liquidity

Liquidity in this variable describes the total current liabilities of the company's total assets. If the value of current debt is high, the company's financial risk is even greater. The formula used is as follows:

$$Liquidity = \frac{Current\ Liabilities}{Total\ Assets}$$

g. X7 = Log (Fixed Assets)

The variable that calculates the company's Fixed Asset Log, where this type of non-current asset is used in the company's operations, where the assets are not for sale and purchase. Examples of fixed assets or tangible sets are land, buildings, property, machinery, etc.

h. X8 = Liquidity

Liquidity describes the company's short-term finances and monitors working capital efficiency within one year. The following formula is used:

$$Liquidity = \frac{Working\ Capital}{Total\ Debt}$$

i. X9 = Solvency

Solvency indicates that the level of cash flow productivity or income generated by the company is strong enough to pay interest. The following is used:

$$Solvency = \frac{EBIT \, Log}{Interest \, Expense}$$

The following is the cut-off value of the Fulmer model:
1) If the value of H < 0 the company has the potential to face bankruptcy.
2) If the H value > 0 the company is classified as financially.

5. Grover Model (G-Score)

$$G = 1.650 \, X1 + 3.404 \, X2 - 0.016X3 + 0.057$$

a. X1 = Liquidity

Liquidity describes the effectiveness of a company in obtaining working capital for the company's total assets. The formula used is as follows:

$$Liquidity = \frac{Working \, Capital}{Total \, Assets}$$

b. X2 = Profitability

Profitability describes the effectiveness of the company's total assets in obtaining profits before paying taxes and interest, as well as measuring the assets owned by the company whether it is carried out effectively and rationally in obtaining company profits. The formula used is as follows:

$$Profitability = \frac{EBIT}{Total \, Assets}$$

c. X3 = Profitability

Profitability or Return on Assets (ROA) shows how the company uses or utilizes its assets in generating profits, describing asset turnover as mea-sured by sales volume. The formula used is as follows:

$$Profitability = \frac{Net \, Profit}{Total \, Assets}$$

The cut-off values   for the Grover model are as follows:
1) If the value of G < -0.02 the condition of the company is said to be bankrupt.
2) If the G value > 0.01, the company is in a financially condition.

Data Analysis Method

The data collection technique in this study uses documentation techniques, in the form of financial statements of retail companies that have been published

by the official website of the Indonesia Stock Exchange (IDX) www.idx.co.id. The data analysis method in this research is using Microsoft Excel software by calculating and analyzing based on several formulas on the bankruptcy prediction model of Altman Z-Score, Springate, Zmijewski, Fulmer, and Grover, to classify the financial financial condition of retail companies before the Covid-19 pandemic and during the Covid-19 pandemic in the 2019–2020 period.
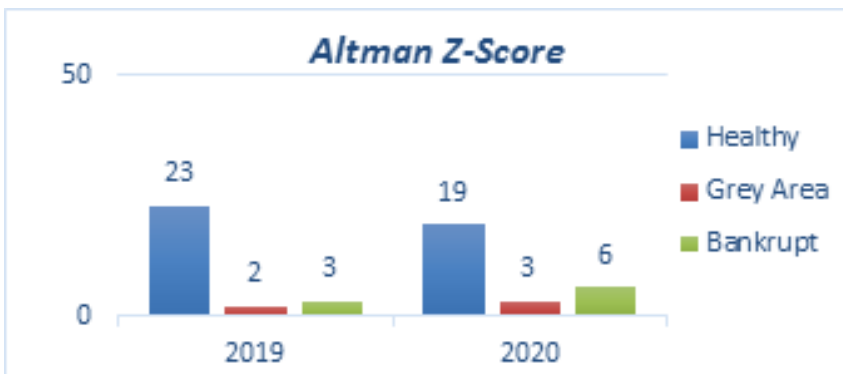
RESULTS

1. Altman Model

Figure 1 Classification of Altman Calculation Results

Based on Figure 1 from the prediction of the Modified Altman model, it shows that in 2019 that produces a value (Z-Score <1.1) so that it is predicted that 3 companies will experience bankruptcy, namely Global Teleshop Tbk. (GLOB), Matahari Putra Prima Tbk. (MPPA), and Trikomsel Oke Tbk. (TRIO), 2 companies are in the Gray Area state, while 23 companies are declared in a financially condition. While in 2020 which produces a value (Z-Score <1.1), it is predicted that as many as 6 companies will experience bankruptcy namely Industry and Trade Bintraco Dharma Tbk. (CARS), Catur Sentosa Adriprana Tbk. (CSAP), Global Teleshop Tbk. (GLOB), Matahari Putra Prima Tbk. (MPPA), Tiphone Mobile Indonesia (TELE), and Trikomsel Oke Tbk. (TRIO), 3 companies in the Gray Area state, and 19 companies declared in good financial.
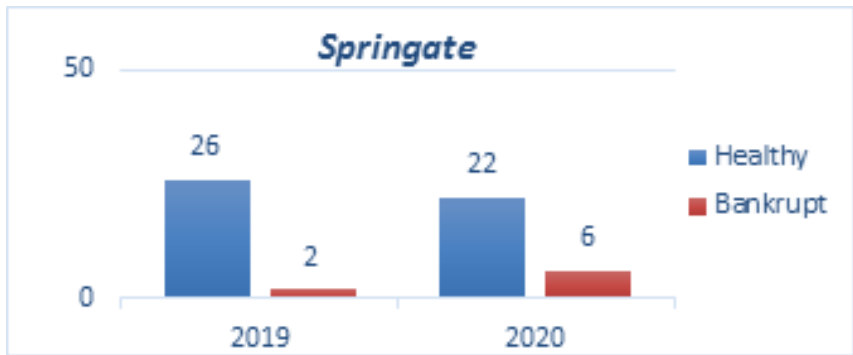
2. Springate Model

Figure 2 Classification of Springate Calculation Results

Based on Figure 2 the predictions of the Springate model show that in 2019 2 companies produced a value (S-Score < 0.86). The companies predicted to go bankrupt are Global Teleshop Tbk. (GLOB) and Trikomsel Oke Tbk. (TRIO), and 26 companies are in good financial. In 2020 which produces a value (S-Score < 0.86) as many as 6 companies so that it is predicted to experience bankruptcy namely Industry and Trade Bintraco Dharma Tbk. (CARS), Catur Sentosa Adriprana Tbk. (CSAP), Global Teleshop Tbk. (GLOB), Sona Topas Tourism Industry Tbk. (SONA), Tiphone Mobile Indonesia (TELE), and Trikomsel Oke Tbk. (TRIO), while 22 companies are in good financial.
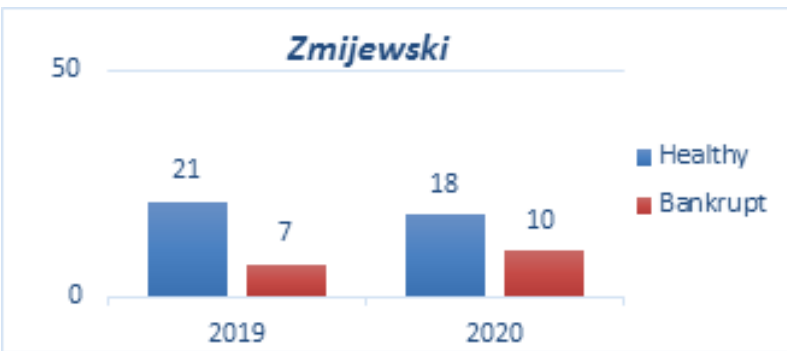
3. Zmijewski Model

Figure 3 Classification of Zmijewski Calculation Results

Based on Figure 3 of the predictions of the Zmijewski model, it can be seen that in 2019 which resulted in a positive value or (X-Score>0), namely there are 7 companies predicted to go bankrupt, namely Industry and Trade Bintraco Dharma Tbk. (CARS), Global Teleshop Tbk. (GLOB), Kokoh Inti Arebama Tbk. (KOIN), Mitra Communication Nusantara Tbk. (MKNT), Matahari Putra Prima Tbk. (MPPA), Tiphone Mobile Indonesia (TELE) and Trikomsel Oke Tbk. (TRIO), for 21 companies in good financial. In 2020 which produces a positive value or (X-Score> 0) as many as 10 companies so that it is predicted to experience bankruptcy namely Industry and Trade Bintraco Dharma Tbk. (CARS), Catur Sentosa Adriprana Tbk. (CSAP) Duta Intidaya Tbk. (DAYA), Global Teleshop Tbk. (GLOB), Kokoh Inti Arebama Tbk. (KOIN), Matahari Department Store Tbk. (LPPF), Communication Partners Nusantara Tbk. (MKNT), Matahari Putra Prima Tbk. (MPPA), Tiphone Mobile Indonesia (TELE), and Trikomsel Oke Tbk. (TRIO), while 18 companies are in good financial.
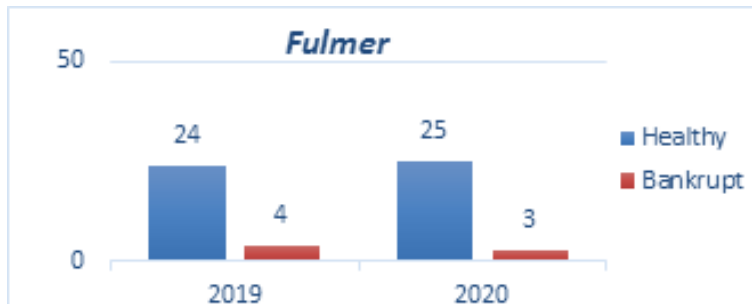
4. Fulmer Model

Figure 4 Classification of Fulmer Calculation Results

Based on Figure 4 from the prediction results of the Fulmer model, if in 2019 4 companies produced a value (H-score <0), it was predicted that they would experience bankruptcy. Namely Global Teleshop Tbk. (GLOB), Matahari Putra Prima Tbk. (MPPA), Tiphone Mobile Indonesia (TELE), and Trikomsel Oke Tbk. (TRIO), while 24 companies are in good financial. In 2020 which produces less S-Score (H-score<0) as many as 3 companies so that it is predicted to go bankrupt namely Global Teleshop Tbk. (GLOB), Tiphone Mobile Indonesia (TELE), Trikomsel Oke Tbk. (TRIO), and 25 companies are in good financial.
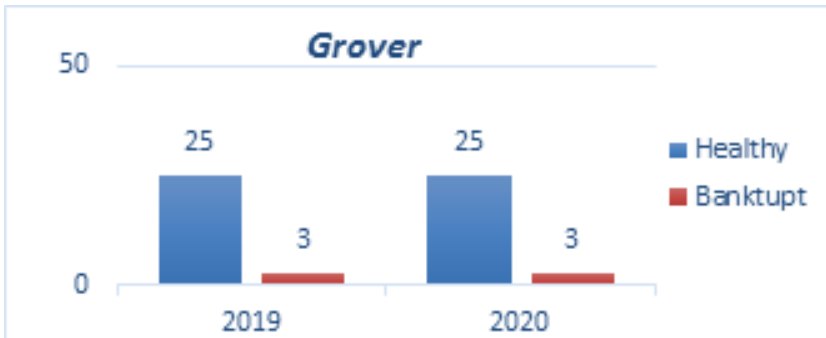
5. Grover Model

Figure 5 Classification of Grover Calculation Results

Based on Figure 5 of the predictions of the Grover model, 3 companies are predicted to experience bankruptcy in 2019 (G-Score <-0.02). Namely Global Teleshop Tbk. (GLOB), Tiphone Mobile Indonesia (TELE), and Trikomsel Oke Tbk. (TRIO), as well as 26 companies in good financial. In 2020 which produces a value (G-Score <-0.02) as many as 3 companies so that it is predicted that they will go bankrupt, namely Global Teleshop Tbk. (GLOB), Tiphone Mobile Indonesia (TELE), Trikomsel Oke Tbk. (TRIO), and 25 companies are in good financial.

DISCUSSION

It can be seen that the results of the bankruptcy prediction model of Altman (Z-Score), Springate (S-Score), Zmijewski (X-Score), Fulmer (H-Score), and Grover (G-Score) have several differences, this is caused by the differences in ratio indicators used to analyze the financial condition of Indonesian retail companies, such as profitability ratios, solvency, liquidity, activity ratio or asset turnover, and cash flow ratio. Where the Altman model (Z-Score) uses a comparison between the book value of equity and total debt. Springate (S-Score) compares sales of profit before tax with current liabilities. Zmijewski (X-Score) uses the ratio of current assets to current liabilities. Fulmer (H-Score) compares fixed assets, cash flow, total debt, equity, and interest expense. And Grover (G-Score) made a comparison between net income and total assets. If a company

wants to avoid the risk of bankruptcy, then the company must manage its financial performance as well as possible, such as managing short-term or long-term debt, company assets, profit before taxes and interest, net income, retained earnings, sales levels.

From the results of the analysis of the financial of retail companies that go public in Indonesia on the Indonesia Stock Exchange (IDX) for the 2019-2020 period, it is known that some retail companies are predicted to face bankruptcy. For example, Industry and Trade Bintraco Dharma Tbk. (CARS) in 2019 is predicted to face bankruptcy by the Zmijewski model, and in 2020 by the Altman, Springate, and Zmijewski models, due to a decrease in working capital, and negative earnings before interest and taxes, thereby harming the company. Matahari Putra Prima Tbk. (MPPA) in 2019 is also predicted to experience bankruptcy by Altman, Zmijewski, and Fulmer, while in 2020 it is predicted to experience bankruptcy by the Altman and Zmijewski models. Bankruptcy occurs as a result of poor management of the company's working capital and negative retained earnings, so the company suffers a lot of losses. Meanwhile, in 2019 Duta Intidaya Tbk. (DAYA), Hero Supermarket Tbk. (HERO), Matahari Department Store Tbk. (LPPF), and Kokoh Inti Arebama Tbk. (KOIN), Mitra Communication Nusantara Tbk. (MKNT) in 2019 and 2020 are predicted to experience bankruptcy by the Zmijewski model, is caused by the company's poor financial performance in obtaining profits and managing current assets and company debt.

In 2019 and 2020, 3 companies are estimated to face bankruptcy according to the modified Altman, Springate, Zmijewski, Fulmer, and Grover method, namely global Teleshop Tbk. (GLOB), Tiphone Mobile Indonesia (TELE), and Trikomsel Oke Tbk. (TRIO). The three companies are retail companies engaged in electronics and telecommunication equipment, whose businesses have suffered losses and they are threatened of being delisted from the Indonesia Stock Exchange (delisting). For example, the Global Teleshop Tbk. (GLOB) company has continued to experience losses since 2017, due to the decline in the company's financial performance, the decline in sales of cellular phones, computers, and notebooks which have an impact on profit. The Tiphone Mobile Indonesia (TELE) company also had poor financial performance due to a decline in the level of cell phone sales, so it was threatened with bankruptcy and the company defaulted on its bonds and bank loans.

Altman (Z-Score) in Predicting Bankruptcy

Based on the results of the study, it shows that the Altman model can be used as a method of estimating the financial condition of retail companies that go public on the Indonesia Stock Exchange, and can be useful for reviewing decision making in improving the company's financial capabilities. If the Altman value (Z-Score) is higher, then the company will be expected to face bankruptcy, due to a decrease in overall assets, working capital, and a decrease in operating profit before interest and corporate taxes.

Springate (S-Score) in Predicting Bankruptcy

Based on the results of the data study, it is revealed that the Springate (S-Score) method can also be used as a method to determine the financial level of retail companies. If a company is predicted to experience bankruptcy by the Springate model, then the company is experiencing a decline in sales, negative working capital, and negative earnings before interest and taxes.

Zmijewski (X-Score) in Predicting Bankruptcy

Based on the results of data analysis, the Zmijewski model can also be used as a method to measure the financial level of retail companies in Indonesia. If the X-Score is high, the higher the company is predicted to experience bankruptcy. This was due to a decrease in the company's net profit, a decrease in total assets, and an increase in trade payables.

Fulmer (H-Score) in Predicting Bankruptcy

Based on the results of data analysis, it is known that the Fulmer model (H-Score) can be used as a method to determine the financial level of retail companies. If the results of the analysis (H<0) then the company has the potential to go bankrupt, this was due to negative retained earnings, negative earnings before taxes, and negative company working capital.

Grover (G-Score) in Predicting Bankruptcy

Based on the results of the data study, it shows that the Grover model (G-Score) can be used for methods that can determine the financial level of retail

companies. If a company is categorized as bankrupt by the Grover model, it is a sign that the company must improve its financial performance, this was due to negative operating income, earnings before interest and taxes (EBIT), and a decrease in all assets owned.

Soin this case the bankruptcy prediction model of Altman, Springate, Zmijewski, Fulmer, and Grover can be used as a method to detect the financial of go public retail companies in Indonesia which are listed on the Indonesia Stock Exchange (IDX). Some retail companies have experienced a decline in sales levels and have even suffered a lot of losses since the Covid-19 pandemic, this is evidenced by an increase in the number of retail companies that are predicted to go bankrupt in 2020. However, most retail companies are still able to survive in the Covid-19 pandemic situation. Despite experiencing a decline in sales and operating profit levels, the company was still able to survive and maintain a balance in financial performance, they are also still able to minimize the risk of the company going bankrupt

Conclusion

From the analysis of data regarding the financial of retail companies listed on the Indonesia Stock Exchange (IDX) for the 2019–2020 period, it can be concluded that the results of the analysis of the bankruptcy prediction method of Altman Modification, Springate, Zmijewski, Fulmer, and Grover gave different results, caused by differences in ratio used in each bankruptcy prediction model. Several companies are predicted to experience bankruptcy, a consequence affected by the Covid-19 pandemic which causes a decrease in financial performance company even up to bear a lot of losses. However, most retail companies are still able to survive by maintaining the balance of the company's financial performance and can minimize the risk of bankruptcy during the Covid-19 pandemic. This can be seen from the results of data analysis that has been carried out, that most of the retail companies listed on the Indonesia Stock Exchange (IDX) are declared to be in a financially condition in 2019–2020. For the company to avoid bankruptcy, the company must manage its financial performance as well as possible, such as regulating the level of sales, company liabilities, company assets, profit before taxes and interest, net income, retained earnings,

receivables turnover, working capital, as well as minimizing operating costs company.

Suggestion

For companies, where the Modified Altman, Springate, Zmijewski, Fulmer, and Grover models can be used as a method in assessing the company's financial condition to minimize the risk of bankruptcy in the future. This analysis is also expected to be used as an alarm so that the company can immediately improve its financial performance. For investors, the results of the analysis of the Modified Altman, Springate, Zmijewski, Fulmer, and Grover methods can be used as consideration in evaluating the company's financial performance, so that the investors can avoid putting an investment into the companies that are predicted to go bankrupt in the future.

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