

PREDICTION ANALYSIS OF COMPANY BANKRUPTCY USING COMPARISON OF THE ALTMAN METHOD (Z-SCORE) AND GROVER METHOD (G-SCORE) AS AN EARLY WARNING IN PHARMACEUTICAL SUBSECTOR COMPANIES

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THE ALTMAN METHOD (Z-SCORE) AND GROVER METHOD (G-SCORE) AS AN
EARLY WARNING IN PHARMACEUTICAL SUBSECTOR COMPANIES**

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ABSTRACT

The research objective is to predict the bankruptcy of pharmaceutical companies listed on the Indonesia Stock Exchange in the 2019-2021 by using a comparison of the Altman method (Z-Score) and the Grover method (G-Score). Using a type of quantitative research using secondary data from the annual financial reports of pharmaceutical companies listed on the Indonesia Stock Exchange for the 2019-2021. The data collection technique uses a saturated sample technique using data analysis, namely the Altman method (Z-Score) and the Grover method (G-Score).

The results show that from the annual calculations using the Altman method, there are 6 companies in healthy condition and 3 companies in distress and gray areas, while the Grover method calculates that all companies, namely 9 companies, are declared to be in financially healthy condition with 27 samples of data for the 2019-2021. In calculating the level of accuracy, the Altman method obtains an accuracy of 77.7%, while the Grover method obtains an accuracy of 100% by looking at the number of correct predictions and the entire sample.

Keywords : *Altman, Grover, Bankruptcy, Level of Accuracy, Prediction*

BACKGROUND

The purpose of establishing a company is to obtain profits for the company, it can also be an increase both in the value of the company's shares or the welfare of shareholders. If someone wants to know whether the company is considered good as a whole, then the main thing to know is in terms of financial health. The existence of a healthy financial condition can be possible that the company's condition is also in a stable category and can also be seen from the profits obtained by a company. For this reason, the need for special supervision regarding financial conditions can be carried out by the company as early as possible, with the aim of minimizing

9 whether the company's financial condition is in the category of healthy or not so that this will be used as a benchmark for the potential for bankruptcy.

Covid-19 pandemic has clearly paralyzed many business sectors due to limited space for community movement. This is also felt from economic factors, because many residents infected with the Covid-19 virus make demand for drugs, medical devices, vaccines also increase. Not only that, the increasing market of masks at that time also made several mask producers increase the selling price of their products, so that it was also felt by the impact by the community.

This was also felt by the pharmaceutical sector, at the time of Covid-19 pandemic national pharmaceutical industries were recorded significantly by 10.81%. Judging from the record of the national pharmaceutical industry, the sales indicator is approximately Rp. 90-95 trillion (Winarto, 2022). Because in Indonesia the supply of raw materials for the pharmaceutical sector is still 90% import, this is a concern of the company. In the midst of the limitations of the supply of raw materials, it turns out that in the Covid-19 pandemic era the demand for raw materials increased. If the company cannot stabilize the market demand with the selling price of the product in accordance with this will result in the financial distress conditions of the company (Fitra, 2020).

Financial distress or commonly called financial difficulties is a condition where the company experiences a condition that makes the company's financial statements experience difficulties. Usually this happens because of various factors, both internal terms, for example, a decrease in profit that is on an unnatural threshold and an external aspect can be seen from the state of the inflation of a country or the exchange rate of the exchange rate can also affect the company's financial distress conditions. For this reason, the need for Early Warning for companies in predicting whether their financial conditions are in the healthy category or preferably.

9 Bankruptcy is a condition in which the company is not possible to operate well and stable, which usually can be marked by the opportunity to obtain an opportunity to get a profit and fail in continuing the company's operational activities. Analysis of bankruptcy predictions is carried out to obtain an initial warning regarding the potential bankruptcy of the company (Masdiantini, 2020). For this reason, the bankruptcy of a company can be prevented by analyzing bankruptcy.

THEORETICAL REVIEW

Financial management

According to Sutrisno (Kadafi, 2019), financial management can be interpreted as all company activities related to efforts to use and allocate these funds efficiently. Financial managers play an active role in allocating company funds well so that the results obtained are better so that they can stabilize the company's funds and assets in generating profits.

Financial statements

According to Hery (Sapari, 2022), financial statements are the result of the accounting process used as an instrument to communicate financial data or company activities to parties concerned with internal and external parties, where the financial statements can show the company's financial health conditions and company performance .

Bankruptcy

According to Ghosh (Sudrajat, 2019), bankruptcy is a puzzle that the company is trying to avoid, analysts like to measure and find difficulties to predict in general. Potential danger lies in aspects such as poor quality assets and weak capitalization, as evidenced in other historical events.

The bankruptcy of a company can occur because there are factors underlying, as for these factors can come from both internal such as the inability of the company in paying off the company's debt, or external such as inflation, interest rates, etc.

Altman Method (Z-Score)

This method was developed by Edward I. Altman in 1968, as a result of his research after selecting 22 financial ratios, found 5 ratios that can be combined to see companies that are bankrupt and not bankrupt. Altman conducted several studies with different company objects, therefore Altman produced several different formulas to be used in several companies with different conditions. Altman formed 3 Z-Score formulas for 3 different company categories, namely for open manufacturing companies, for closed companies, for non-manufacturing companies/other general use, in this study using the Altman 1 formula (for open manufacturing companies): Altman I model (for open manufacturing companies) The formula used is as follows (Sumarna, 2020):

$$Z = 1,2(X1) + 1,4(X2) + 3,3(X3) + 0,6(X4) + 1,0(X5)$$

Where :

Z = Bankruptcy model score

X1 = Working Capital/Total asset

X2 = Retained Earning/Total asset

X3 = Earning Before Interest and taxes/Total asset

X4 = Market Value Equity/Book Value of Total Liabilities

X5 = Sales / Total asset

Classification of healthy or bankrupt companies according to the grover method of cut-off values/ criteria:

- Z value $\leq 1,81$ bankrupt
- Value $1,81 < Z < 2,99$ grey area (enter into categories whose predictions change, cannot be ascertained whether in good health or bankruptcy)
- Z value $> 2,99$ not bankrupt (is in the healthy category)

Grover Method (G-Score)

The Grover Method is the abnormalities and development of the Altman method, in this Grover method there is a deleted ratio that is the company's market value ratio and the ratio of profit is held to the total assets and adding the ROA ratio. Researchers from this method namely Jeffrey S. Grover conducted research by taking a sample of 35 bankrupt companies and 35 companies did not go bankrupt in the period 1982-1996. The results of the study showed the accuracy of 97.7%, this indicates that the Grover method is suitable for detecting financial distress in the company (Fahma, 2019). The formula formulated by Grover (Sumarna, 2020):

$$G = 1,650(X1) + 3,404(X2) + 0,016 ROA + 0,057$$

Where :

G = Bankruptcy model score

X1 = Working Capital to Total Asset

X2 = Earning before Interest tax to Total Asset

X3 = Net Income to Total Asset

Classification of healthy or bankrupt companies according to the grover method of cut-off values/ criteria:

- a) $G \leq - 0,02$, then the company is classified as experiencing bankruptcy
- b) $G \geq 0,01$, then the company is classified as not experiencing bankruptcy.

RESEARCH METHODS

The chosen population includes the whole in accordance with the object to be studied. The population in this study was a pharmaceutical subsector company listed on the Indonesia Stock Exchange for the 2019-2021 as many as 9 companies that were covered in the study. Sampling used in this study uses nonprobability sampling techniques using saturated samples.

Saturated samples are sampling techniques used in research if the sample used is relatively small, as well as for generalization purposes with more small mistakes. In a saturated sample all populations were used 5 samples in the study (Hartanto, 2018), so that the sample of the Pharmacy Subsector company listed on the Indonesia Stock Exchange for the 2019-2021 was 9 samples.

Table 1 List of Pharmacy Companies Listed on the IDX 2019-2021

No	Code	Company Name	Total Number of Companies
1	DVLA	Dania Varya Laboratoria Tbk	
2	INAF	Indofarma (Persero) Tbk	
3	KAEF	Kimia Farma Tbk	
4	KLBF	Kalbe Farma Tbk	
5	PEHA	PT.Phapros Tbk	
6	PYFA	Pyridam Farma Tbk	
7	SIDO	Industri Jamu & Farmasi Sido Muncul Tbk	
8	SOHO	PT.Soho Global Health Tbk	
9	TSPC	Tempo Scan Pasific Tbk	
Number of research samples			9

Source : Data processed, 2023

Data collection techniques in this study in the form of secondary data with the financial statements of pharmaceutical companies listed on the IDX 2019-2021 and use quantitative data types in the form of numbers in the financial statements. The data analysis technique used is to calculate the financial statements of the pharmaceutical company listed on the IDX for the 2019-2021 with 2 methods namely the Altman (Z-Score) method and the Grover Method (G-Score) which is then adjusted to the criteria of each method. After adjusting to the method criteria, then conducting the accuracy test, the use of this test is to see the accuracy of the results of the calculation of the prediction of the company's bankruptcy model by comparing the 2 Prediction Methods of Bankruptcy used, namely the Altman Method and the Grover Method. This test shows the percentage of the method in predicting the condition of the company based on the entire sample used (Mulyani, 2018) Analysis is accompanied by using the calculation of the percentage of accuracy of each method. Formula :

$$\text{Compatibility Level} = \frac{\text{The number of predictions is correct}}{\text{Number of samples}} \times 100\%$$

RESULTS AND DISCUSSION

1. Calculation of the value of the Altman method

The first step that must be taken is to calculate the ratio in the Altman (Z-Score) method. The formula in this method there are 3 formulas, but what is used in this study is the Altman 1 method formula because the pharmaceutical subsector is part of the manufacturing sector so that the Altman 1 formula is used (for public manufacture), the second step is adjusted to the results of the Z-Score per year the company is already adjusted the cut-off so that it can be seen companies that are predicted to experience financial distress or healthy conditions in the results of the prediction score.

The calculation results from Altman predictions in pharmaceutical companies listed on the IDX for the 2019-2021 of 9 samples of the company with 27 samples according to the 2019-2021 stated that there were 6 companies classified bankrupt, 1 company was in the gray area, and 20 companies were declared healthy.

2. Calculation of the value of the Grover method

The first step that must be taken is to calculate the ratio contained in the Grover (G-Score) method. After calculating based on the ratio of the grover, then adjusted to the results of the G-Score per year the company that has been adjusted for the cut-off so that it can be seen companies that are predicted to experience financial distress conditions or healthy on the results of the prediction score.

The calculation results from the Grover Prediction in Pharmacy Companies listed on the Indonesia Stock Exchange for the 2019-2021 of 9 samples of the company with 27 samples according to the 2019-2021 state that overall the calculated pharmaceutical companies are classified as healthy based on the Grover method that has been adjusted to its cut-off .

3. Accuracy test

This test is used to determine the accuracy of the bankruptcy prediction method used in predicting pharmaceutical companies listed on the IDX for the 2019-2021. Following are the results of the accuracy test of the two bankruptcy prediction methods:

Table 2 Calculation of accuracy levels of altman method predictions and grover methods

Prediction	Altman	Grover
Bangkrupt	6	-
Grey Area	1	-
Not Bangkrupt	20	27
Total Sample Data	27	27
Accuracy (%)	77,7%	100%

Source : Data processed, 2023

Based on these calculations it can be concluded that the level of accuracy of the Altman method gets results (77.7%) by stating 6 companies are in a bankrupt area, 1 in the gray area, and 20 berda in non-bankruptcy conditions. In the calculation of the company's accuracy test in the Gray Area, the condition is not bankrupt. While the Grover method gets the results of accuracy (100%) by stating the overall sample of healthy pharmaceutical companies in financial statements during the 2019-2021. So that the use of the Grover method is more accurate to predict the bankruptcy of pharmaceutical companies listed on the IDX for the 2019-2021.

The Altman method has cut-off criteria, namely it is said to be bankrupt if the Z-Score value is less than 1.81, it is said to be in the gray area if the Z-Score value is $1.81 < Z < 2.99$, and ≥ 2.99 then otherwise healthy. Looking at the results of the annual calculations, it shows that there are 3 companies in the category of results of the calculations that are in the category of bankruptcy and the gray area, including companies with issuer code (KAEF) which obtain results

of calculations in 2019 of 0.97911 which are stated to be in a condition bankrupt according to the Altman method criteria, in 2020 (KAEF) obtained a Z-Score of 2.00079 which is in the gray area category according to the Altman method cut-off so it is not certain whether the company is in the healthy category or not, in 2021 obtaining a result of 1.72191 is predicted to be in the bankrupt category.

The next result that has been calculated is in a distress condition, namely companies with issuer code (PEHA) successively from 2019 obtaining a result of 1.33033, then in 2020 obtaining a result of 1.50610 and in 2021 obtaining a result of 1.39147 so that the calculation (PEHA) during the 2019-2021, the z-score calculation results were in the bankrupt category according to the Altman cut-off method. Other results were also obtained by companies with issuer codes (PYFA) which obtained a z-score calculation result in 2021 of 1.78109 so that they are in the bankrupt category according to the Altman Z-Score cut-off method. However, several other companies show prediction results that are in the healthy category annually based on calculations from their annual financial report data for the 2019-2021 according to the Altman Z-Score criteria/cut-off method.

In the Grover method based on the criteria if the calculation results are less than -0.02 then the company is in the bankrupt category, pharmaceutical company calculations for the 2019-2021 period using the Grover method show the results of bankruptcy prediction calculations that there are 9 pharmaceutical companies with a total of 27 data based on the 2019 - 2021, which is the object of research, obtains prediction results in the healthy category, this is based on the annual calculation results for the 2019-2021.

The results of the calculation of the accuracy test for the comparison of the two methods used, in this case the Grover method obtains an accuracy of 100% based on the calculation of 27 sample data from a total of 9 pharmaceutical companies for the 2019-2021, while the accuracy results of the Altman method obtain an accuracy of 77.7% based on the calculation of 27 sample data from a total of 9 pharmaceutical companies for the 2019-2021, so it can be concluded that the use of the bankruptcy prediction method with the Grover method is suitable for use in predicting the bankruptcy of pharmaceutical companies listed on the Indonesia Stock Exchange for the 2019-2021 due to prediction calculations and its accuracy is in accordance with the real conditions of companies that are still operating today.

CONCLUSIONS AND RECOMMENDATIONS

The results of the calculation of the Altman method with 9 pharmaceutical companies and the number of samples of 27 data based on the scope of the 2019-2021 stated that there were 6 companies predicted to go bankrupt, 1 company was in the gray area, and 20 companies were in good health. The next method is the Grover method which states that based on the calculation results obtained the overall results of the pharmaceutical company as many as 9 companies with 27 data samples with the scope of the 2019-2021 are in a healthy condition that has been adjusted to the cut-off.

The results of the accuracy test calculation in the Altman method are (77.7%) while the results of the accuracy of the Grover method get the results of (100%), this means the use of the Grover Prediction Model is appropriate to be used in predicting the bankruptcy of

4 pharmaceutical companies listed on 15 Indonesia Stock Exchange for the 2019-2021 because the prediction results are in accordance with the real conditions of the company that is still operating today.

1 There is a bankruptcy prediction calculation used in this study using the Altman Z-Score method and the Grover G-Score method used for early detection of a company's financial bankruptcy. In determining bankruptcy, companies do not rely on financial reports alone but can come from external factors such as changes in consumer tastes, high industry competition, and many other factors. Companies that are predicted to experience bankruptcy do not necessarily go directly to bankruptcy, but 2 with the prediction of bankruptcy it can be used as a reference for company management to improve the company's performance so that the calculated predictions do not occur.

The limitation of this study is the use of the bankruptcy prediction method for only two comparisons, so that future researchers are expected to be able to compare the bankruptcy prediction method more than the two methods currently used by researchers. To test the level of accuracy, it is hoped that the next researcher will add the type of error to see the accuracy of the predictive tool used

Based on the conclusions above, the following recommendations can be stated:

- a) The company is expected to always maintain the stability of the condition of its financial statements and 2 increase the company's capital.
- b) For investors the results of this study can be used as a reference for information before making decisions in investment, especially in pharmaceutical companies listed on the Indonesia Stock Exchange.
- c) For further research, researcher can use other bankruptcy prediction methods that are not used in this study, to compare the level of accuracy of each method in predicting company bankruptcy.

REFERENCES

- Anita V, W. 2018. "Analysis of Potential Bankruptcy Using the Springate Method in Property and Real Estate Companies Listed on the Indonesian Stock Exchange". *Journal of Economics and Management*, 12(2), 89-99.
- Cattleyana, D. 2020. "Analysis of the Financial Health of State-owned Companies in 2009-2018". *Indonesian Journal of Management Science and Business*, 10(2), 187-193.
- Fahma, Y. 2019. "Financial Distress Analysis Using the Altman, Zmijewski, Grover, Springate, Ohlson and Zavgren Methods to Predict Retail Company Bankruptcy". *Asian Scientific Journal of Business and Economics*, Volume 15 No.2, 200-216.
- Fitra, S. 2020, October 5. Katadata. Retrieved November 19, 2022, from [Katadata.co.id:https://www.google.com/amp/s/katadata.co.id/amp/safrezifitra/finansial/5f7c09e484bf8/industri-farmasi-di-tengah-pandemi-gain-or-lose](https://www.google.com/amp/s/katadata.co.id/amp/safrezifitra/finansial/5f7c09e484bf8/industri-farmasi-di-tengah-pandemi-gain-or-lose)

- Ghozali, I. 2015. *Multivariate analysis with the SPSS program*. Semarang: Diponegoro University Publisher.
- Gupita, N. 2020. "Comparative Analysis of Altman Z-Score, Springate, Zmijewski, and Grover in Predicting Financial Distress (Studies of Infrastructure Sector Companies Listed on the IDX for the 2015-2019 Period)." *Actual Journal of Applied Business Financial Accounting (AKUNBISNIS)*, Vols 3(1), 145-162.
- Hartanto, R. 2018. "Financial Distress Analysis for Predicting Bankruptcy Risk in Pharmaceutical Companies in Indonesia". *Journal of Management Science and Research (JIRM)*, 7(12).
- Hasan, S. E. 2022. *Financial Management*. Widina.
- Hery, S. 2015. *Management performance analysis*. Gramedia Widiasarana Indonesia.
- Iqbal, A. 2020. "Detection of the Financial Health of State-Owned Enterprises (BUMN) Using Financial Discriminant Models". *Journal of ASET (Accounting Research)*, 12(2), 289-300.
- Kadafi, M.A. 2019. "Potential Bankruptcy of Indonesian Oil and Gas Mining Companies for the 2013-2015 Period". *JEBM*, Vol 21(2), 154-164.
- Kasmir. 2014. *Analysis of Financial Statements*. Jakarta: Grafindo Persada.
- Kason, C. T. 2020. "Comparative Analysis of the Accuracy of Predicting Financial Distress Using the Grover, Springate and Altman Z-Score Models in Mining Companies Listed on the Indonesian Stock Exchange in 2013-2017". *JIMEA: MEA Scientific Journal (Management, Economics, and Accounting)*, Vol 4(3).
- Masdiantini, P. 2020. "Financial Reports and Prediction of Company Bankruptcy". *JIA: Scientific Journal of Accounting*, Vol 5(1), 196-220.
- Mulyani, L. 2018. "Comparative Analysis of the Accuracy of Prediction of Company Financial Distress Using the Altman, Springate, Zmijewski and Grover Methods (Studies of Retail Companies Listed on the Indonesian Stock Exchange for the 2015-2017 Period)". *Accounting Student Scientific Journal (JIMAT)*, 9(2).
- Nisa K, Y. S. 2022. "Comparative Analysis of Accuracy of Bankruptcy Prediction Methods Altman Z-Score, Grover, and Zmijewski". *Surplus: Research Journal of Economics, Management, and Accounting Students*, Vol 2(1), 23-35.
- Noviandani, N. 2018. "Altman Z-Score Analysis for Predicting Bankruptcy in Manufacturing Companies in the Consumer Goods Sector in Indonesia". *The National Conference on Management and Business (NCMAB)*.
- Oktaviandri A, F. 2017. "Bankruptcy Prediction Analysis Using the Altman, Springate, Ohlson, and Grover Methods for Companies in the Indonesian Stock Exchange's Agricultural Sector for the Period 2011-2015". *UNIKOM Scientific Magazine*, 15.

- Primasari N.S. 2017. "Analysis of Altman Z-Score, Grover Score, Springate, and Zmijewski as Signaling Financial Distress (Empirical Study of Consumer Goods Industry in Indonesia)". *Accounting and Management Journal*, 1(1).
- Sapari, L. 2022. "An Analysis of Bankruptcy Prediction at Pt Sido Muncul's Herbal and Pharmaceutical Industries". *MUSAMUS:Journal of Business & Management*, 4(2), 320-334.
- Saputra, I. 2021. "Bankruptcy Analysis Using the Altman Z-Score, Springate, Zmijewski, Foster and Grover Methods at Bank Mandiri Tbk". *Research in Accounting Journal (RAJ)*, 1(3), 431-439.
- Siswanto, P. 2021. "Bankruptcy Prediction Analysis Using the Altman, Springate, and Zmijewski Models in Pharmaceutical Companies". *Journal of Accounting, Finance, Tax, and Information (JAKPI)*, Vol 1(2), 44-63.
- Sudrajat, M. 2019. "Bankruptcy (Financial Distress) Prediction Analysis with a Comparison of the Altman, Zmijewski and Grover Models". *INVENTORY:Journal of Accounting*, 3(2), 116-130.
- Sugiyono. 2016. *Quantitative, Qualitative and R&D Research Methods*. Bandung.
- Sumarna, E. 2020. "Analysis of Altman, Zmijewski, Springate, Grover Bankruptcy Prediction Models in the Chemical Sub-Sector Manufacturing Industry Registered at IDX in 2013-2018". *Tirtayasa Business and Management Research Journal (JRBMT)*, Vol 4 No.2, 109-122.
- Wahyuni, S. 2021. "Financial Distress Analysis Using the Altman Z-Score, Springate, Zmijewski and Grover Methods for Plantation Sector Companies Listed on the Indonesian Stock Exchange". *Mannegio:Scientific Journal of Master of Management*, 4(1), 62-72.
- Winarto, Y. 2022, March 7. Retrieved November 7, 2022, from NEWSSETUP: <https://newssetup.kontan.co.id/news/selama-pandemi-industri-farmasi-catatkan-penjualan-achievement-rp-95-trillion?page=all>
- Yuliana., D. 2018. "Prediction of Corporate Bankruptcy from Financial Aspects Using Various Methods". Malang: UIN-Maliki press.

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