



## ANALYSIS OF THE USE OF THE ALTMAN Z-SCORE METHOD, SPRINGATE METHOD AND GROVER METHOD AS SIGNALING FINANCIAL DISTRESS

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### Abstract

The effectiveness of the Grover, Springate, and Altman Z-Score methods was compared in this study. This research aims to analyze the performance of the cable telecommunications sector on the Indonesia Stock Exchange from 2018 to 2020. The sample consists of 19 companies that will be traded on the Indonesia Stock Exchange between 2018 and 2021. These companies form a sample size of 72 involved in the cable communications business. This research uses descriptive statistics, capital feasibility tests, regression model feasibility tests, coefficient of determination tests, statistical significance tests, and hypothesis tests. Based on research findings, only the Z-Score approach significantly influences the prediction of financial difficulties among the three methods. Moreover, there is no striking difference between Grover's method and Springate's method for forecasting financial problems.

**Keywords:** Altman Z-Score, Springate, Grover and Financial Distress methods

## INTRODUCTION

Developments in the era of globalization have brought major changes, especially to the world of economics. As a result, companies must be able to adapt and develop following the flow of change. One of the goals of establishing a company is to generate profits with the ambition of the company being able to operate as long as possible. In fact, not all companies are able to compete and develop following the flow of change as expected. The threat of bankruptcy encourages companies to always be alert and prepare for all the worst possibilities that may occur in the future. Bankruptcy prediction itself is the art of predicting a company's financial condition. Predicting the likelihood of bankruptcy can be done using various strategies and methodologies. To date, the most well-known approaches to forecasting economic hardship are the Altman Method, Springate Method, and Grover Method. For this reason, financial analysis is a solution for companies to predict all possibilities that will occur in the future. The results of financial forecasts are very helpful in speeding up management's response to problems to control them before bankruptcy occurs. Management who is responsive and active in detecting and investigating the causes of financial distress can practice strategies and financial turnover to control these conditions. Financial distress analysis models continue to develop along with changing eras. Studies on financial problems in telecommunications companies may be very rare, although

several approaches related to financial difficulties have often been used as study objectives in organizations in Indonesia. The author of "Analysis of the Use of the Altman Z-Score Method, Springate Method, and Grover Method as Signaling Financial Distress" wants to know more about assessing and forecasting financial distress in the telecommunications business in Indonesia.

(Firqotus Sa'idah, 2020), the Altman method can be used as a support for companies in terms of predicting and predicting the level of company bankruptcy by analyzing the company's financial statements. (Sri & Rubiyah, 2021), This method was developed by Edward I Altman in 1968 through several financial ratio selection processes, then 5 ratios were found that were suitable to be combined. According to Supardi (2003:73), the Z-Score is calculated by multiplying conventional financial ratios by the probability of a company going bankrupt. Prihatini (2013:421), in his research, revealed that Altman's method had an accuracy rate of 81 percent. The Springate model was created by Gorgon LV Springate in 1978 using a sample of 40 companies (Munjiyah & Artati, 2020). (Mimelientesa and others, 2022) After testing, Springate decided to reduce the number of ratios it uses from 19 to only 4. In this model, the company will be declared bankrupt if the score is below 0.862 ( $S < 0.0862$ ), otherwise if the score owned exceeds 0.0862 ( $S > 0.0862$ ) the company will be declared not bankrupt. After revising and re-evaluating the Altman Z-Score Model, the Grover model was developed (Sudrajat & Wijayanti, 2019). Komarudin and Syafnita (2019) define a healthy company. The financial ratios X4 (book value of equity/book



value of liabilities) and X2 organizations in Indonesia. The author of "Analysis of the Use of the Altman Z-Score Method, Springate Method, and Grover Method as Signaling Financial Distress " wants to know more about assessing and forecasting financial distress in the telecommunications business in Indonesia.

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## RESEARCH METHODS

	2021	5	-	13
Springate	2020	3	-	15
S-Score	2019	5	-	13
Method	2018	5	-	13
	2021	13	-	5
Grover G-	2020	12	-	6
Score	2019	14	-	4
Method	2018	13	-	5

Table 1. Research Results

Wired telecommunication service is a company that offers services in the wired telecommunications sector such as internet services (Internet Service Provider / ISP) and data transfer using cables. Based on calculation table 1, each method shows different results each year. The Grover method has the lowest company distress prediction results for 3 consecutive years among other methods. On the other hand, the highest prediction results for distressed companies were shown by the Springate Method, with a number of more than 10 companies over 3 years. Apart from that, the Altman Method shows results that are in an intermediate position between the two methods, with the number of distressed companies not exceeding 10 companies and above 5 companies for 3 years.

## RESULTS AND DISCUSSION

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Harga (X1)	73	6	12	9.42	1.462
Kualitas Pelayanan (X2)	73	5	12	9.59	1.632
Efisiensi Waktu (X3)	73	6	12	9.53	1.591
Minat Pelanggan (Y)	73	4	8	6.41	1.141
Valid N (listwise)	73				

Figure 1. Results Descriptive statistics

Based on results output test statistics descriptive on can concluded that :

1. The price variable (X1) with a sample size of 73 has a minimum value of



6, the maximum value 12 with an average value of 9.42 and a standard deviation value of 1.462.

2. The service quality variable (X2) with a sample size of 73 has a minimum value 5, mark the maximum 12 on average - flat mark 9.59 and the standard deviation value is 1.632.

3. The time efficiency variable (X3) with a sample size of 73 has the minimum value 6, the maximum value 12 with an average value of 9.53 and a standard deviation value of 1.591.

4. The Customer Interest variable (Y) with a sample size of 73 has a minimum value of 4, the maximum value 8 with an average value of 6.41 and a standard deviation value of 1.141.

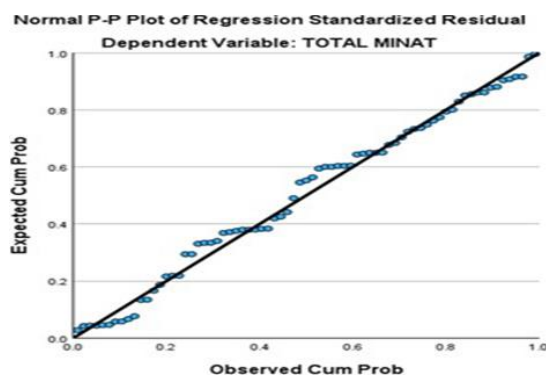


Figure 2. Chart – Plots

Based on line P-Plot on , can seen that point – point gather follow the existing diagonal line.

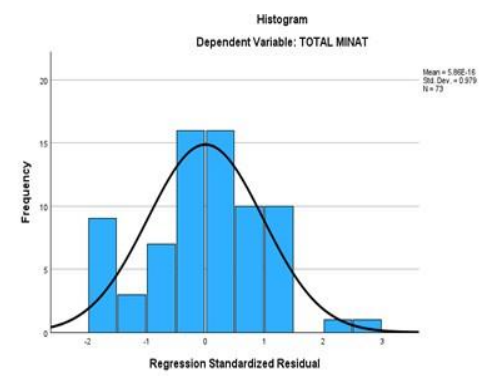


Figure 3. Histograms

Based on the histogram graph above , it can be seen that the bell-shaped wave is symmetrical between left and right.

Based on the table above, the Z-Score as S- Score as X2 has a sample size of 72, minimum value -649.74, maximum value 21.11, mean value -13.2496, and standard deviation value 83.44632. G-Score as X3 has a sample size of 72, minimum value -1038.96, maximum value 15.24, mean value.

Based on the table above, it shows that the significance value of the independent variables Z-Score, Springate and Grover is 0.997, where this figure is >0.05, which means the data is fit and acceptable.

Iteration	-2 Log likelihood	Coefficients	
		Constant	
Step 0	1	68.619	-1.278
	2	68.004	-1.497
	3	68.002	-1.513
	4	68.002	-1.513

Iteration	-2 Log likelihood	Coefficients				
		Constant	Z SCORE	S SCORE	G SCORE	
Step 1	1	59.419	-1.341	.000	-.101	.061
	2	51.818	-1.560	.000	-.547	.339
	3	42.868	-1.639	-.001	-1.475	.924
	4	37.989	-1.720	-.002	-2.431	1.526
	5	31.414	-1.913	.003	-2.880	1.524
	6	26.165	-1.985	.018	-2.720	.785
	7	19.184	-2.068	.054	-2.587	-.923
	8	16.580	-2.289	.088	-3.310	-2.050
	9	16.148	-2.491	.108	-4.010	-2.491
	10	16.120	-2.560	.113	-4.341	-2.542
	11	16.120	-2.566	.114	-4.377	-2.540
	12	16.120	-2.566	.114	-4.377	-2.540

Figure 4. Overall and Iteration History

Based on the table above, it is known that the value of -2LogLikelihood 0 is 68,002 and the value of -2LogLikelihood 1 is 16,120, where there is a decrease from -2LogLikelihood 0 to -2LogLikelihood block 1, which means the hypothesized model fits the data.

To conclude that the Z-Score of the independent factor has a significant effect on the dependent variable, we need to



compare it with an alpha value of 0.05, and a significance value of 0.010 is smaller than this threshold. S-Score, also known as Springate, is an independent variable that is significant at the 0.210 level, above the 0.05 threshold. No statistically significant correlation was found between the S-Score and the dependent variable. With a value of 0.333, Grover's independent variable is statistically significant. There is no significant relationship between G-Score and the dependent variable.

The Altman Z-Score approach has quite a big impact on forecasting financial difficulties in cable communication services sub-industry businesses listed on the IDX in 2018–2021, as seen from H0 which is allowed and H1 which is rejected. This is confirmed by the Altman Z-Score significance value of 0.010 in table 3.7 which is lower than the alpha value of 0.05. sub-industry companies listed on the IDX for the 2018-2021 period. Table 2 shows the Springate significance value of 0.210 which is significantly greater than the cutoff value of 0.05 which is used as the hypothesis testing threshold.

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To conclude that the G-Score Grover method is not effective in predicting financial difficulties in cable communication services sub-industry companies listed on the IDX in 2018-2021, we must reject H0 and accept H1. Grover's significance value of 0.333 is greater than the alpha value of in table 2, giving credence to this.

## CONCLUSION

Financial difficulties can be predicted accurately using the Altman Z-Score model. There was no visible impact of the Springate S-Score model in predicting financial distress. There is no visible impact of Grover's G-Score model in predicting financial problems.

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