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ANALYSIS OF BANKRUPTCY MODELS IN INSURANCE COMPANIES IN INDONESIA

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ABSTRACT

Research on various models of financial distress analysis has been developed to predict the beginning of corporate bankruptcy, such as the Springate model, Altman Z-Score, Grover, and others. Each type of company provides varying accuracy in each analysis model based on variations in the findings of previous research investigations. This research aims to analyze whether the Springate, Altman Z"-Score, and Grover models can be used in predicting corporate financial distress. The research was conducted on insurance companies at the Financial Services Authority in 2021. The sampling technique used purposive sampling techniques. A research sample of 76 companies that met the sampling criteria was obtained, and a total research population of 127 companies was used. This research is quantitative research where the analytical tool used is a logistic regression test with SPSS version 25. The results of this study show that the springate model can be used in predicting financial distress of insurance companies with a significance value of 0.001 < 0.05, H1 received. The Altman Z-score model could not predict the financial distress of insurance companies with a value of 0.298 > 0.05 H2 rejected. Grover's model can be used to predict insurance companies' financial distress with significance values of 0.004 < 0.05 H3 received.

Keywords : Financial Distress, Bankruptcy Model, Springate, Altman Z" Score, Grover.

INTRODUCTION

The COVID-19 pandemic, which has been unfolding globally in recent years, has significantly influenced the growth of the insurance industry, particularly in Indonesia. As this industry rapidly evolves, insurance companies are confronted with a significant challenge to enhance and sustain public trust. To avert financial difficulties that could impede future business expansion and affect policyholders, insurance companies must be proactive in identifying early signs of financial distress.

Early disclosure of financial distress-related information provides a window of opportunity for management, owners, investors, regulators, and other stakeholders to take appropriate actions. Management and company owners can implement preventive measures to forestall the escalation of conditions toward severe bankruptcy. Investors can leverage this information to make more informed investment or divestment decisions. Over time, numerous researchers have developed predictive models to assist investors and creditors in identifying companies for potential investment, thereby avoiding potential financial distress issues.

To mitigate the risk of financial distress, companies can adopt a proactive approach by implementing an early warning system. This model acts as a tool to identify early signs of financial distress, enabling companies to take corrective action before the situation escalates to a crisis or bankruptcy level. This approach offers a comprehensive and proactive framework for managing financial risk in a business environment, providing a sense of security and reassurance.

According to Adharyanti (2019), predicting bankruptcy will benefit many stakeholders, especially creditors and investors. Therefore, a financial distress prediction analysis is needed so that early prevention can be carried out. Bankruptcy prognosis informs stakeholders about the company's financial performance and whether future financial problems are likely. The sooner signs of financial distress are understood, the better it is for company management to create, improve, or determine the right company policies from the start to avoid failure in efforts to solve problems before the business goes bankrupt. Investors must be aware of bankruptcy as an outsider to make the best choices. Research on various financial distress analysis models has been widely developed to predict the onset of corporate bankruptcy, such as the Springate model, Altman Z-Score, Grover, and others.

Based on research conducted by R. P. Sari (2018), the Altman Z-Score approach has the lowest error rate, only 8%, and the best accuracy (92%), compared to Springate, which has an accuracy value of 77%, and Zmijewski, which has an accuracy of 85% in predicting the possibility of bankruptcy. The Altman model is most suitable for predicting the bankruptcy of manufacturing companies.

Sembiring & Sinaga (2022) found that in retail companies with an accuracy rate of 79%, the Springate approach outperformed the Altman, Grover, and Zmijewski methods for making predictions. Kimin et al. (2020) found that Grover is a method with an accuracy rate of 100% in Islamic commercial banking companies compared to the Springate and Zmijewski methods.

Based on previous research findings, Each type of company provides varying accuracy in each analysis model. Therefore, this study seeks to understand whether the three prediction models can be used in implementing financial distress predictions in insurance companies and which model is most suitable for predicting financial distress in insurance companies.

METHODS

This study was conducted on life insurance companies in OJK that have published financial reports for 2021 and 2022 by accessing and downloading financial reports on the official websites of each company. The sampling method used was purposive sampling. According to Suharyadi and Purwanto (2019:17), Purposive sampling has a specific purpose. This research data analysis technique utilizes descriptive statistics and logistic regression analysis. Data analysis in this study utilizes quantitative analysis methods, which are carried out through collecting, processing, and interpreting data in numbers. These are then analyzed using the three models used in this study: Springate, Altman, and Grover.

The results of the calculations of the three models will then be subjected to regression testing to see whether the three models can be used to predict financial distress in insurance companies in OJK using statistical methods using the SPSS application. Financial distress, in reality, is measured using a dummy variable category 1 with the provision that the company has a DER value of more than 100% or experiences negative net income, and category 0 for the non-financial distress category with the provision that the company has a DER value below 100% or does not experience negative net income. The test begins with a descriptive statistical analysis and a multicollinearity test. A logistic regression test consists of a test of the entire model, a test of the feasibility of the regression model, and an analysis of the coefficient of determination.

RESULTS AND DISCUSSION

After collecting and tabulating all the required data properly, we conducted a descriptive analysis. The results of the descriptive statistical tabulation are shown in Table 1.

Table 1. Descriptive Statistics Results

Description	Minimum	Maximum	Average	Standard Deviation	Coefficients of Variation
Springate	-1.440	2.705	0.80794	0.695932	0.861
Altman Z"-Score	-16.720	15.740	3.88938	3.893496	1.001
Grover	-2.075	3.971	0.83012	0.717651	0.865

Source: Data Processing Results

Table 1 shows that the total data contained in the study is 76 samples obtained through the financial reports of insurance companies registered with the Financial Services Authority (OJK) in 2021. The Springate model shows a minimum value of -1.44 and a maximum value of 2.705. Furthermore, the average (mean) Springate value is 0.807 with a standard deviation value of around 0.695. The Altman Z"-score variable has a minimum value of -16.720 and a maximum value of 15.740. The average (mean) Altman Z"-score is 3.889, with a standard deviation value of around 3.893. The Grover model shows a minimum value of -2.075 with a maximum value of 3.971. The average (mean) Grover Model owned by the company in this study is 0.830, with a standard deviation value of around 0.717.

Based on the coefficient of variation value, we can see that the more extensive data distribution occurs in the Altman Z Score model because it has a coefficient of variation value of 1.001. This means that the Altman bankruptcy prediction model provides a broader prediction variation. Meanwhile, the Springate and Grover prediction models have the same coefficient of variation, namely 0.861 and 0.865, respectively. Based on this, predictions using the Altman model are relatively more challenging than those of the other two models.
After getting an overview from descriptive analysis, various tests based on regression are then carried out. The test results are shown in table 2.

Table 2. Logistic Regression Test Results

Description	Beta	Sig
Springate	-6.894	0.001
Altman Z"-Score	-0.210	0.298
Grover	5.083	0.004

Source: Data Processing Results

The Springate coefficient of -6.894 indicates a negative coefficient direction, meaning that every 1% increase in Springate will decrease the chance of financial distress by 6.894, and vice versa, every 1% decrease in Springate will increase the chance of financial distress by 6.894. The Altman coefficient of -0.210 indicates a negative coefficient direction, meaning that every 1% increase in Altman will decrease the chance of financial distress by 0.210 and vice versa, every 1% decrease in springate will increase the chance of financial distress by 0.210. The Grover coefficient of 5.083 indicates a positive coefficient direction, meaning that every 1% increase in Grover will increase the chance of financial distress by 5.083, and vice versa; every 1% decrease in Grover will decrease the chance of financial distress by 5.083.

Table 3. Overall Fit Model Test

Iteration		-2 Log likelihood	Coeficient			
			Constant	Springate	Altman Z"-Score	Grover
Step 0	1	89.666	-.895			
	2	89.595	-.962			
	3	89.595	-.963			
Step 1	1	71.109	-.152	-1.807	-.062	1.156
	2	62.989	.022	-3.926	-.112	2.850
	3	60.484	.362	-5.832	-.167	4.275
	4	60.178	.548	-6.751	-.204	4.973
	5	60.172	.578	-6.892	-.210	5.081
	6	60.172	.579	-6.894	-.210	5.083
	7	60.172	.579	-6.894	-.210	5.083

Source: Data Processing Results

The tables above compare the -2Log Likelihood values at the beginning (block number = 0) and -2Log Likelihood at the end (block number 1). Through the two tables, it can be seen that the -2Log Likelihood score at the beginning (block number = 0) is 89,595, while the -2Log Likelihood value at the end (block number = 1) is 60,172, which means there is a decrease. With this decrease, it can be concluded that the hypothesized model fits the data.

In conducting the Regression Model Feasibility Test using Hosmer and Lemeshow's Goodness of Fit, a chi-square value of 6,558 and a significance value of 0.585 were obtained. It is known that a significance value exceeding the threshold of 0.05 indicates that the research hypothesis is rejected. This indicates no significant difference between the model and the research data. Therefore, the regression model is an adequate fit for the observation data, and the model can be used effectively to predict the results of observations. This finding provides additional confidence that the selected regression model is based on the characteristics of the research data and can be relied on to provide accurate predictions within the framework of this study.

Springate Model in Predicting Financial Distress

The Springate model predicts 37 insurance companies will experience financial distress out of 76 companies studied. Meanwhile, in 2022, only 21 companies will experience financial distress based on a der value above 100 or negative net income. The Springate prediction model correctly predicted that 16 companies will experience financial distress out of 21 companies experiencing financial distress. Based on the regression analysis test that has been carried out, the Springate model can be used significantly to predict financial distress with a significance value of 0.001 <0.05 with a coefficient value of -6.894, which means that every 1% increase in Springate will reduce the chance of financial distress by 6.894 and vice versa. The analysis results in the hypothesis test concluded that the Springate model can be implemented to predict financial distress conditions in insurance companies in Indonesia. This condition indicates that the financial ratios used in the Springate model can describe the financial distress conditions of insurance companies. The Springate model utilizes four financial ratios: working capital to total assets, EBIT to total assets, EBT to current liabilities, and sales to total assets.

The Altman Z"-Score model in predicting financial distress

The Altman Z"-Score model predicts that eight insurance companies will experience financial distress out of 76 companies studied. The companies indicated to be experiencing financial

distress are based on the Altman Z"-Score model prediction. Meanwhile, in 2022, 21 companies were truly experiencing financial distress based on a der value above 100 or negative net income. The Altman Z"-score prediction model correctly predicted six companies experiencing financial distress out of 21 companies experiencing financial distress. Based on the regression analysis test that has been carried out, the Altman z"-score model, the Altman z"-score model is not significant and can be used to predict financial distress with a significance value of 0.298> 0.05 with a coefficient value of -0.210, which means that every 1% increase in the Altman z"-score will reduce the chance of financial distress by 0.210 and vice versa. From the results of the analysis in the hypothesis test, it was concluded that the Altman model cannot be implemented to predict financial distress conditions in insurance companies in Indonesia. The Altman z"-score model does not significantly affect the probability of financial distress in insurance companies. The Altman z"-score uses four financial ratios: working capital to total assets, retained earnings to total assets, earnings before interest and tax to total assets, and book equity to book value of debt. Two ratios differ from those used in predicting financial distress: the ratio of retained earnings to total assets.

Grover's model in predicting financial distress

The Grover model predicts five insurance companies will experience financial distress out of 76 companies studied. Based on Grover's model predictions, the companies indicated that they were experiencing financial distress. In 2022, 21 companies are truly experiencing financial distress based on a value above 100 or negative net income. The Grover prediction model correctly predicts four companies experiencing financial distress out of 21 companies experiencing financial distress. Based on the regression analysis test that has been carried out by the Grover model, the Grover model can be used significantly to predict financial distress with a significance value of 0.004 <0.05 with a coefficient value of 5.083 which means that every 1% increase in Grover will increase the chance of financial distress by 5.083 and vice versa. From the analysis results in the hypothesis test, it is concluded that the Grover model can be implemented to predict financial distress conditions in insurance companies in Indonesia. The ratios used in the Grover model are working capital to total assets, EBIT to total assets, and ROA.

CONCLUSION

The Springate model obtained a significance value of 0.001 < 0.05 with a negative coefficient (-6.894). This proves that the calculation of the Springate model can be implemented in estimating the financial distress conditions of insurance companies. Thus, the research hypothesis stating that the Springate S-score can be implemented to predict financial distress conditions in insurance companies in Indonesia is accepted.

The Altman z”-score model obtained a significance value of 0.298> 0.05 with a negative coefficient (-0.210). This proves that the calculation of the Altman z”-score model is not significant in estimating financial distress in insurance companies, so it can be concluded that the research hypothesis stating that the Altman Z”-score can be implemented to predict financial distress conditions in insurance companies in Indonesia is rejected. This is in line with the descriptive analysis, which concludes that the variation of the Altman model is relatively more comprehensive than that of the other two models.

The Grover model obtained a significance value of 0.004 < 0.05 with a regression coefficient 5.083. This finding shows that the Grover model can be used to project the financial

distress conditions of insurance companies. Thus, the research hypothesis stating that the Grover model can be implemented to predict financial distress conditions in insurance companies in Indonesia can be accepted.

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