RELEVANCE:
Journal of Management and Business
ISSN (online) : 2615-8590 ISSN (print) : 2615-6385

Analysis Comparison Financial Distress Prediction Models for Hotel, Restaurant, and Tourism Subsector Companies on IDX

Mutia Andini
Faculty of Economics, Bangka Belitung Univeristy, Bangka Belitung, Indonesia
mutiaandini20@gmail.com

Dian Prihardini Wibawa
Faculty of Economics, Bangka Belitung Univeristy, Bangka Belitung, Indonesia
dianpw.mustafa@gmail.com

Ari Agung Nugroho
Faculty of Economics, Bangka Belitung Univeristy, Bangka Belitung, Indonesia
rma.agungnugroho@gmail.com

Article Info

Keywords:

Financial Distress; Taffler; CA-Score; Grover; Ohlson

Submission : 08 Apr 2022
Revised: 14 Agust 2023
Accepted: 22 Sept 2023

Abstract

The Covid-19 outbreak has plagued and spread to all corners of the world, one of which is Indonesia. As a result of the prolonged Covid-19, Indonesia's economic growth has decreased as well as publicly listed companies on the IDX. This study aims to: (1) test whether there are differences in the prediction results between Taffler, CA-Score, Grover and Ohlson models, (2) test which predictive model is the most accurate in predicting the financial distress of companies in hotel, restaurant, and tourism sub-sectors, and (3) knowing which companies are predicted to be affected by financial distress. This type of research is quantitative descriptive using secondary data taken from the company's financial statements with purposive sampling technique so that there are 13 companies as samples. The results showed that there were differences in the prediction results of Taffler, CA-Score, Grover, and Ohlson models with the highest level of accuracy owned by the Grover model, which was 93,85%. Based on the calculation of the Grover model, there are three companies that are predicted to experience financial distress. Therefore, to overcome this, the company can improve its performance by increasing working capital and profits.

Introduction

The international world is facing a dangerous disease in the middle 2019. This disease is caused by a deadly virus called the corona virus. The Corona virus is endemic and spread to all corners of the world, one of which is Indonesia. In response to the Covid-19 outbreak, the Indonesian government issued various policies, including the Large-Scale Social Restriction policy, the Enforcement of Community Activity Restrictions policy, physical and social distancing policy. The implementation of these policies throughout the Covid-19 pandemic will have an impact on slowing national economic growth, decreasing state revenues, and increasing spending. This slowdown in economic

growth can affect micro or macro economic variables which ultimately results in economic instability (Basri, et al., 2020). Sri Mulyani Indrawati as the Minister of Finance of the Republic of Indonesia said that Indonesia's overall economic growth in 2020 experienced a contraction, which was in the range of less than 1,1 to positive 0,2%. The economic contraction was lower than the previous year, which was estimated by the government at only minus 1,1% (Sitorus, 2020).

If Indonesia's economic growth reaches minus numbers in a row, Indonesia will be hit by an economic recession. The economic recession that occurred during the Covid-19 period had a negative impact on sector and sub-sector companies, such as hotel, restaurant, and tourism sub-sector companies. The hotel sub-sector experienced a decline in the aggregate occupancy levels in various major cities in Indonesia. Room Occupancy Rate for star hotels in Indonesia during March 2020 decreased by around 16,98% or reached an average of 32,24 when compared to last month (bps.go.id, 2020). The restaurant sub-sector reports about 56% of declining sales, 22% of problems in financing aspects, 15% of problems with distribution of goods, and 4% of problems with the difficulty of obtaining raw materials (kemenkopukm.go.id, 2020). Developments in the tourism sector are closely related to the surrounding community which also plays a role in supporting development with regard to various aspects, including socio-cultural, political and economic aspects (Ibrahim, et al., 2021). The Covid-19 outbreak also has an impact on the tourism sub-sector globally, so many tourists delay or even make their travel plans, causing companies in this sub-sector to suffer huge losses (Zukhri and Rosalina, 2020). While in the tourism sub-sector, foreign tourist visits to all entrances to Indonesia in 2020 were only 4,052,923 people. This number experienced a decline of 74,84% when compared to the total visits in 2019 which amounted to 16,108,600 foreign tourists (kemenparekraf.go.id, 2021).

As a result of the decline in terms of both visits and income, this will certainly have a negative impact on the hotel, restaurant, and tourism sub-sector companies, resulting in symptoms of financial distress or bankruptcy. One indicator of companies affected by financial distress can be seen from the existence of negative net income for a certain number of years (Whitaker, 2017). Financial distress is defined as a situation in which a company's operating cash flow is insufficient to meet current obligations (eg interest expenses or credit trading) and the company is forced to take corrective action. In this case, financial distress is said to be the company's inability to obtain sufficient cash flow to meet payments in line with the agreement (Arifin, 2018). Efforts to overcome this condition are by means of the company detecting its financial performance according to certain standards such as an alarm early warning system or as an indicator of potential financial distress with certain formulations (Ashraf, et al., 2019)

This study aims to (1) test whether there are differences in the prediction results of Taffler, CA-Score, Grover, and Ohlson models in predicting the financial distress of companies in the hotel, restaurant, and tourism sub-sector, (2) testing which predictive

model is the most accurate, and (3) find out which companies are predicted to be affected by financial distress. So that this research does not expand in scope and because of the many prediction models of financial distress, the researcher limits the problem of this research by (1) use 4 prediction models, namely the Taffler, CA-Score, Grover and Ohlson models, (2) the company population is the Hotel, Restaurant and Tourism Subsector companies which are listed on the Indonesia Stock Exchange (IDX) and provide annual reports (annual financial reports) for the complete period 2016-2020, (3) companies that have negative net income during the 2016-2020 period.

Review of Literature

Financial Statement

Financial statement is an information record that explains the financial condition of a company at a certain time, where this information can be used as an overview of the company's financial performance situation (Penman, 2013). The purpose of financial statements is to convey information to interested parties regarding the financial condition of a company as measured in monetary or financial units. A financial statement is very vital for a company due to these contained all information about the company that could use by interested parties to notice the performance and financial condition of the company, therefore they could be predicting the financial distress in the future (Ditasari, et al., 2019).

Financial Statement Analysis

Financial statement analysis is an activity to analyze financial statements. This analysis is formed from a concept and a financial accounting system. Financial statement analysis includes the application of data and techniques in financial statements in terms of obtaining values and correlations that are useful in the decision-making process. Financial statement analysis can be concluded as a process of analyzing and examining financial statements which are divided into balance sheets, income statements, and attachments in recognizing the financial condition and level of company health which are structured using certain techniques (Septiana, 2019).

Financial statement analysis has been used to assess a company's likelihood of financial distress — the probability that it will not be able to repay its debts. Financial statement analysis was used by credit suppliers to assess the credit worthiness of its borrowers (Beaver, et al., 2011). Financial statement analysis consist of financial ratio analysis that is an analysis technique that is often used, because it is the fastest analysis technique for measuring company performance (Firdaus and Endri, 2020).

Financial Distress

Financial distress is defined as a situation in which a company's operating cash flow is insufficient to meet current obligations (eg. interest expenses or credit trading) and the

company is forced to take corrective action. In this case, financial distress is said to be the company's inability to obtain sufficient cash flow to meet payments in line with the agreement. Financial distress exists when a company's cash flow is less than the total long-term debt that has matured or in other words the company has a negative net profit in one or several years (Whitaker, 2017). In a bankrupt business, it is first observed that the assets are less than the debts. Therefore, the equity of the business is negatively valued (Altman, 1968).

For conditions in Indonesia, financial distress are more influenced by financial leverage and profitability (Fachrudin, 2020). Bankruptcy is divided into several stages as follows (Kordestani, et al., 2011):

1) Latency is the stage where Return On Assets (ROA) will decrease.

2) Shortage of cash, is the stage where the company lacks cash, the company does not have sufficient resources to pay debts now even though there is still the possibility of having a strong level of profitability.

3) Financial distress, is the stage of financial difficulty, where the company is in a financial emergency. This situation is generally close to bankruptcy.

4) Bankruptcy, is the stage where if the company cannot cope with financial distress events, the company will be exposed to bankruptcy.

Model Prediction of Financial Distress

Taffler model developed by Richard J. Taffler. Taffler (1983) provides a formulation of the collapse model that was first used to examine manufacturing and industrial firms cited on the London Stock Exchange from 1969-1976 (Tiryaki, 2021). Taffler uses Multiple Discriminant Analysis (MDA) in analyzing bankruptcy. The results of the predictions of this model show 100% for companies that are not bankrupt and 95,7% for companies that are bankrupt (Sayari and Mugan, 2017). The sales function of this model is as follows, *T-Score*= 3,2 + 12,18 X1 + 2,5 X2 – 10,68 X3 + 0,0289 X4. If the Taffler value is negative, the company is at risk of bankruptcy and vice versa, if the Taffler value is positive, the company is not at risk of bankruptcy. In this model, if the Taffler value is <0.3, the risk of bankruptcy is high, whereas if the Taffler value is > 0.3, the risk of bankruptcy is low (Widiasmara and Rahayu, 2019).

CA-Score model was developed under the leadership of Jean Legault University of Quebee in Montreal in 1987 with the failure of Multiple Discriminant Analysis (MDA) in analyzing the failure rate of companies in Canada. CA-Score (1987) uses three financial ratio variables (Shalih and Kusumawati, 2019). The sales function of CA-Score model is as follows: *CA-Score*= 4,5913 X1 + 4,508 X2 – 0,3936 X3 – 2,7616. If the CA-Score is > -0.3, the company is at risk of going bankrupt. And if the CA-Score value is < -0.3, the company does not have a bankrupt risk (Kartikasari and Hariyani, 2019)

Grover (2003) model is a model developed by evaluating and redesigning the Altman Z-Score model. Jeffrey S. Grover sampled 70 companies with 35 companies that were not bankrupt and 35 companies that went bankrupt from 1982 to 1996 (Hungan and

Sawitri, 2018). The sales function of this model is as follows: G-*Score*= 1,650 X1 + 3,404 X3 – 0,016 ROA + 0,057. The Grover model classifies companies in bankruptcy with a score equal to or less -0.02 (G ≤ -0.02). Meanwhile, the company category is not bankrupt with a score of more than or equal to 0.01 (G ≥ 0.01). Companies with scores between the lower and upper limits are in the gray area (Salimah and Yunita, 2020).

Ohlson model was pioneered by James Ohlson in 1980. Ohlson (1980) was inspired by various previous studies on financial distress. Ohlson doubted the Multiple Discriminant Analysis (MDA) method at the beginning of his discovery, as a way of using the logistic regression method in his calculations (Waqas and Md-Rus, 2018). Ohlson model has nine variables which are divided into several financial ratios (Chan, 2016). The sales function of this model is as follows: O-*Score*= -1,32 – 0,407 X1 + 6,03 X2 – 1,43 X3 + 0,0757 X4 – 2,37 X5 – 1,83 X6 + 0,285 X7 – 1,72 X8 – 0,521 X9. Ohlson (1980) explained that this model has an optimal cutoff point of 0.38. He makes the cutoff selection because with this value the total error can be reduced. The goal is that if the company has an O-Score value above 0.38 (O-Score> 0.38), it means that the company is predicted to go bankrupt. Conversely, if the company has an O-Score value below 0.38 (O-Score <0.38) it is predicted that the company will not be bankrupt (Putera, *et al*., 2016).

Previous Research

Previous research using the predictive variable model of financial distress has been widely used in various companies in Indonesia. Sayari and Mugan (2017) state that the Taffler model successfully predicts MDA predictions with an accuracy of 95,7% for companies that are predicted to go bankrupt and 100% for companies that are predicted not to go bankrupt. Widiasmara and Rahayu (2019) conclude that there are significant differences between the four prediction models because each variable model and Taffler model are the most suitable models because they have the highest accuracy level of 83,93% and the smallest error level of 16,70 %. Kartikasari and Haryani (2019) conclude that there are differences in the results of the four predictive models where the CA-Score ability to estimate financial distress can be stated to be lacking and the most accurate and effective model in estimating the state of financial distress in companies listed on the IDX in 2015-2017, that's Ohlson models. Salma Salimah and Irni Yunita (2020) said that Grover and Ohlson models are among the best models with 89% accuracy in estimating financial distress conditions that occur in coal mining sub-sector companies.

Hypothesis

H1: There are differences in the prediction results using Taffler, CA-Score, Grover, and Ohlson models in predicting financial distress in the Hotel, Restaurant, and Tourism Sub-sector companies listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period.

H2: The Grover model is a predictive model with the highest rate of accuracy in predicting financial distress in Hotel, Restaurant, and Tourism Sub-sector companies listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period.

Research Method

This research is a type of quantitative descriptive research which has the characteristic of comparing one variable to another. The object of this research is the financial statements of the hotel, restaurant and tourism sub-sector companies for the period 2016-2020 which are listed on the official website of the Indonesia Stock Exchange (www.idx.co.id). In this study, there were 26 hotel, restaurant, and tourism sub-sector companies listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period. The sample is part of the characteristics and quantity possessed by the population, if the population used is large, it is impossible for the researcher to study all of it, but the researcher only takes the sample that will be used from the population (Sugiyono, 2016). The sampling technique in this study uses a purposive sampling technique which is determined based on certain criteria, such as: 1) hotel, restaurant, and tourism sub-sector companies listed on IDX and publish detailed annual reports from the 2016-2020 period. 2) companies that have negative net income during the 2016-2020 period.

The type of data used in this research is quantitative data. Quantitative data is data in the form of numbers or can be called qualitative data that is scored or numbered (Sugiyono, 2016). Sources of data used in this study is secondary data. Secondary data is the provision of data to data collectors that is carried out indirectly (Sugiyono, 2016). Data collection techniques used by literature study and documentation. Literature studies are carried out by examining reading sources from previous studies and various journals related to the problems to be observed as a theoretical reference. While the documentation is done by looking at the company's financial statements from the IDX official website.

The data analysis method used is first about the calculation of each prediction model.

1) Taffler model has a formula, that is:

T-Score = 3,2+12,18X1+2,5 X2-10,68X3+0,0289X4

Which is:

X1 = Profit Before Tax / Current Liabilities

X2 = Current Assets / Total Liabilities

X3 = Current Liabilities / Total Assets

X4 = Profit After Tax / Total Assets

If the Taffler value is negative, the company is at risk of bankruptcy and vice versa, if the Taffler value is positive, the company is not at risk of bankruptcy. In this model, if the Taffler value is < 0,3, the risk of bankruptcy is high, whereas if the Taffler value is > 0,3, the risk of bankruptcy is low (Widiasmara dan Rahayu, 2019).

2) CA-Score model has a formula, that is:

CA-Score = 4,5913X1+4,508X2+0,3936X3-2,7616

Which is:

X1= Shareholder Investment / Assets

X2= EBT + Financial Expenses / Assets

X3= Sales / Assets

If the CA-Score > -0,3 the company is at risk of bankruptcy. And if the CA-Score < -0,3 then the company has no risk of going bankrupt (Rajasekar, et al., 2014).

3) Grover model has a formula, that is:

G-Score = 1,650X1+3,404X3-0,016ROA+0,057

Which is:

X1 = Working Capital / Total Assets

X3 = EBIT / Total Assets

ROA = Net Income / Total Assets

Grover's model classifies companies in bankruptcy with a score equal to or less -0,02 (G ≤ -0,02). While the category of companies in a non-bankrupt condition with a score of more than or equal to 0,01 (G ≥ 0,01). Companies with scores between the lower and upper limits are in the grey area (Aminian, et al., 2016).

4) Ohlson model has a formula, that is:

O-Score = -1,32-0,407X1+6,03X2-1,43X3+0,0757X4-2,37X5-1,83X6+0,285X7-1,72X8-0,521X9

Which is:

X1 = Log (Total Assets / GNP price-level index)

X2 = Total Liabilities / Total Assets

X3 = Working Capital / Total Assets

X4 = Current Liabilities / Current Assets

X5 = 1 jika Total Utang > Total Aktiva ; 0 jika Total Utang < Total Aktiva

X6 = Net Income / Total Assets

X7 = Cash Flow from Operations / Total Liabilities

X8 = 1 if Net Profit is Negative in the last 2 years; 0 if Net Profit is Positive in the last 2 years

X9 = (NIt – NIt – 1) / (NIt + NIt – 1), where NIt is Net Income for the period in the research year and NIt – 1 is Net Income for the previous period.

If the company has an O-Score value above 0,38 (O-Score > 0,38), it means that the company is predicted to go bankrupt. On the other hand, if the company has an O-Score value below 0,38 (O-Score < 0,38), it is predicted that the company will not be affected by bankruptcy (Ghosh, 2017).

The second data analysis method used descriptive statistic analysis. This analysis aims to provide an overview or description of the maximum value, minimum value, mean, and standard deviation of the analyzed sample without the intention of drawing a general conclusion (Sugiyono, 2016).

The third data analysis method is normality test and homogeneity test. Normality testing is done to find out and test whether the data is normally distributed or not. The researcher used the Kolmogrov-Smirnov test as a method to test the normality of the data with a value criteria > 0,05 then the normality assumption was fulfilled. Data that are normally distributed usually include parametric statistic analysis, while data that are not normally distributed usually include non-parametric statistic analysis (Sugiyono, 2016). Homogeneity testing is carried out in conducting trials and knowing whether the data in the regression model is homogeneous or has the same variance or not (Sugiyono, 2016). Homogeneity testing was carried out as a condition before the difference test (ANOVA) and paired sample t-test (Elia and Rahayu, 2021). The criteria in this test is if the significance value ≥ 0,05 it means that the processed data is homogeneous (same), otherwise if the significance value is ≤ 0,05 means that the processed data does not vary homogeneous (not same).

The fourth data analysis method is hypothesis testing. Testing the hypothesis in this study there are two possibilities, namely the data are normally distributed and the data are not normally distributed. If the data is normally distributed, the researcher will use the paired sample t-test, while the data which is not normally distributed, the researcher will use the Kruskall Wallis test. The second hypothesis test uses the rate of accuracy test. This test is used in calculating the level of accuracy of each prediction model. The prediction model with the highest percentage value will be the most accurate and feasible model to be used in a company. The level of accuracy is calculated based on the actual state of the company, which can be seen from the companies (sample) that are declared not to be bankrupt in the calculation results of each predictive model. The formula used to calculate the level of accuracy in each prediction model is as follows (Sudiono, 2017) :

Accuracy Rate = (Total of Correct Predictions)/(Total of Samples) x 100 %

Besides calculating the level of accuracy, the researcher also calculates the level of error in predicting financial distress in the hotel, restaurant, and tourism sub-sector companies. The error rate is calculated from the company (sample) that is declared bankrupt from the results of the prediction model calculations that have been carried out. The equation used in calculating the error rate is as follows (Sudiono, 2017) :

Error Rate = (Total of Error Predictions)/(Total of Samples) x 100 %

Results

Descriptive Statistic Analysis

The following are the results of the descriptive statistic analysis which have been presented in Table 1.

Table 1. Result of Descriptive Statistic Analysis

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Taffler	65	-26,33	357,65	11,4775	45,48292

Descriptive Statistics					
CA-Score	65	-53,60	8,00	-3,1522	9,85945
Grover	65	-0,77	3,22	0,5446	0,56282
Ohlson	65	-22,98	27,19	0,6420	4,72812
Valid N (listwise)	65				

Source: SPSS Output, data processed by researchers (2022)

Based on results of analysis in Table 1 shows that the score of Taffler model has a minimum value of -26,33, a maximum value of 357,65, a mean value of 11,4775, and a standard deviation of 45,48292. CA-Score model has a minimum value of -53,60, a maximum value of 8,00, a mean value of -3,1522, and a standard deviation of 9,85945. Grover model has a minimum value of -0,77, a maximum value of 3,22, a mean value of 0,5446, and a standard deviation of 0,56282. Ohlson model score has a minimum value of -22,98, a maximum value of 27,19, a mean value of 0,6420, and a standard deviation of 4,72812.

Normality Test

The following are the results of normality test which have been presented in Table 2.

Table 2. Result of Normality Test

Tests of Normality				
		Kolmogorov-Smirnov[a]		
	Model	**Statistic**	**Df**	**Sig.**
Score	Taffler	0,334	65	0,000
	CA-*Score*	0,417	65	0,000
	Grover	0,154	65	0,001
	Ohlson	0,250	65	0,000

Source: SPSS Output, data processed by researchers (2022)

Based on the calculations that have been made in Table 2, it can be said that the significance value of the four predictive models is less than 0,05 and it can be concluded that the data in this study did not meet the normality assumption (not normally distributed) so that the researcher would continue the difference test using nonparametric tests. namely the Kruskall Wallis test because the variables used include more than two variables.

Homogeneity Test

The following are the results of homogeneity test which have been presented in Table 3. Based on Table 3, it shows that the significance value is less than 0,05, which means that the variance between Taffler model, CA-Score model, Grover model, and Ohlson model is not homogeneous and there are differences between the four predictive models. Because the data in this study are not normally distributed and not

homogeneous, the researchers will continue the different test (hypothesis test) using a nonparametric test, that is Kruskall Wallis test.

Table 3. Result of Homogeneity Test

Test of Homogeneity of Variances			
Levene Statistic	**df1**	**df2**	**Sig.**
6,670	3	256	0,000

Source: SPSS Output, data processed by researchers (2022)

Kruskall Wallis Test

The following are the results of Kruskall Wallis test which are presented in Table 4.

Table 4. Result of Kruskall Wallis Test

Test Statistics[a,b]	
	Score
Chi-Square	68,377
Df	3
Asymp. Sig.	0,000
a. Kruskal Wallis Test	
b. Grouping Variable: Model	

Source: SPSS Output, data processed by researchers (2022)

Based on Table 4 it can be seen that the Asymp value. Sig. less than 0.05 which is 0.000 which means that there are differences in the prediction results using Taffler, CA-Score, Grover, and Ohlson models in predicting financial distress in hotel, restaurant, and tourism sub-sector companies listed on the Indonesia Stock Exchange (IDX) period 2016-2020. The average difference from the results of the four prediction models is due to the different financial ratios and formulas used by each model.

Level Accuracy Test

The following is a recapitulation of the level of accuracy and error rate of each model in predicting the company's financial distress.

Table 5. Recapitulation of Prediction Model Accuracy and Error Levels

No	Prediction Models	Accuracy Level (%)	Error Level (%)
1	Grover Model	93,85	6,15
2	Taffler Model	78,46	21,54
3	CA-*Score* Model	73,85	26,15
4	Ohlson Model	49,23	50,79

Source: Data Processed by Researchers (2022)

Based on Table 5, it can be seen that in the first order there is Grover model with an accuracy level of 93,85% and an error level of 6,15%. The second order is Taffler model with an accuracy level of 78,46% and an error level of 21,54 %. The third order is CA-Score model with an accuracy level of 73,85% and an error level of 26,15%. Furthermore, the last order is Ohlson model with an accuracy level of 49,23% and an error level of 50,79%.

Additional Analysis

The following is a recapitulation of the calculation results of the Grover model which has been presented in Table 6.

Table 6. Recapitulation of the Calculation Grover Model

No	Nama Perusahaan	Model Grover				
		2016	2017	2018	2019	2020
1	Fast Food Indonesia Tbk (FAST)	1,13	1,01	1,13	1,05	0,33
2	Jakarta International Hotel & Development Tbk (JIHD)	0,28	0,33	0,32	0,19	0,03
3	Jakarta Setiabudi International Tbk (JSPT)	0,80	0,62	0,86	0,58	0,33
4	Sanurhasta Mitra Tbk (MINA)	0,25	0,49	0,33	0,61	0,13
5	Panorama Sentrawisata Tbk (PANR)	0,71	0,91	0,53	0,61	0,03
6	Destinasi Tirta Nusantara Tbk (PDES)	0,65	3,22	0,44	0,37	-0,77
7	Pembangunan Graha Lestari Indah Tbk (PGLI)	0,40	0,40	2,77	0,46	0,01
8	Pembangunan Jaya Ancol Tbk (PJAA)	0,68	0,66	0,70	0,62	-0,07
9	Plaza Indonesia Reality Tbk (PLIN)	0,65	0,60	0,64	0,35	0,06
10	Pudjiadi & Sons Tbk (PNSE)	0,84	0,86	0,70	0,67	0,01
11	Red Planet Indonesia Tbk (PSKT)	0,33	-0,07	0,10	0,24	-0,06
12	Pioneerindo Gourmet International Tbk (PTSP)	0,79	0,84	0,99	1,00	0,13
13	Hotel Sahid Jaya International Tbk (SHID)	0,25	0,37	0,39	0,36	0,23

Source: idx.co.id, data processed by researchers (2022)

Based on Table 6, it can be seen the results of the calculation Grover model that the researcher has done. The table shows that companies have a score of less than or equal to -0,02 are predicted to experience financial distress. The companies concerned include Destinasi Tirta Nusantara Tbk (PDES), Pembangunan Jaya Ancol Tbk (PJAA), and Red Planet Indonesia Tbk (PSKT)..

Discussion

Differences of Financial Distress Prediction Models

Based on the results of the calculations that have been carried out, it can be interpreted that H1 which states that there are differences in the predictions of financial distress between Taffler, CA-Score, Grover, and Ohlson models is accepted so that it can be concluded that there are differences in the prediction results using Taffler, CA-Score, Grover, and Ohlson models in predicting financial distress in hotel, restaurant, and

tourism sub-sector companies listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period. The results of the first hypothesis indicate that this research is in line with research conducted by Widiasmara and Rahayu (2019), Kartikasari and Hariyani (2019), and Elia and Rahayu (2019). However, this study is different or not in line with the research conducted by Putera, et al., (2016) which stated that in comparative analysis of financial distress prediction model they did for coal mining companies listed on the BEI, there were no differences in the results of each prediction model used.

Prediction Model with the Highest Level of Accuracy

Likewise with the results of calculation accuracy and error level where the second hypothesis (H2) in this study is Grover model is a model with highest level of accuracy in predicting financial distress in hotel, restaurant, and tourism sub-sector companies listed on the IDX for the period 2016-2020, accepted. The second hypothesis in this study is in line with research conducted by Nurdyastuti and Iskandar (2019), Salimah and Yunita (2020), Nasri, et al., (2020), Arini (2021), Elia and Rahayu (2021), and Kusumaningrum (2021) which states that Grover model is a financial distress prediction model with the highest level of accuracy compared to other prediction models.

Conclusion

This study shows that based on Kruskall Wallis test there are differences between each prediction model because of the Asymp value. Sig. less than 0,05 that is equal to 0,000, so the first hypothesis in this study is accepted. Based on the results of calculation accuracy and error level, it also shows that Grover model is a predictive model with the highest level of accuracy in predicting financial distress in hotel, restaurant, and tourism sub-sector companies for the 2016-2020 period, which is 93,85% and the lowest error level is 6,15%, so it can be concluded that the second hypothesis in this study is accepted. From the results of Grover model calculations that have been carried out, it can be seen that there are three companies that are predicted to be affected by financial distress, including PT Destinasi Tirta Nusantara Tbk (PDES), PT Pembangunan Jaya Ancol Tbk (PJAA), and PT Red Planet Indonesia Tbk (PSKT).

Taking into account the limitations of this study, the suggestions that the researcher would like to give include: (1) for stakeholders, it is hoped that they will be able to carry out early detection using the Grover model or improve their performance by carrying out various solutions, such as increasing current assets, balancing between current assets with current liabilities, increase the frequency of sales, increase inventory and receivables turnover, and reduce the company's operating costs or expenses, (2) for further researchers are expected to be able to increase the period and sample of research and use predictive models that are still very rarely used such as models Fulmer, Zavgren, and Fuzzy, (3) for the financial authorities, are expected to provide guidance or socialization to companies that are detected as having financial difficulties as a preventive measure to prevent bankruptcy in the future.

References

Altman, E. I. (1968). Financial Ratios, Discriminate Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, *23*, 589-609.

Aminian, A., Mousazade, H., & Khoshkho, O. I. (2016). Investigate the Ability of Bankruptcy Prediction Models of Altman and Springate and Zmijewski and Grover in Tehran Stock Exchange. *Mediterranean Journal of Social Sciences*, *7*(4), 208–214.

Arifin, A. Z. (2018). *Manajemen Keuangan*. Yogyakarta: Zahir Publishing.

Ashraf, S., GS Félix, E., & Serrasqueiro, Z. (2019). Do traditional financial distress prediction models predict the early warning signs of financial distress?. *Journal of Risk and Financial Management*, *12*(2), 55.

Badan Pusat Statistik. 2021. (https://www.bps.go.id/, diakses 18 September 2021).

Basri, H., Muhlisa, N., Tranita, D., Kharisma, & Syarfiah, J. (2020). *Polemik Covid-19 & Perubahan Sosial*. IAIN Parepare Nusantara Press.

Beaver, W. H., Correia, M., & McNichols, M. F. (2011). Financial statement analysis and the prediction of financial distress. *Foundations and Trends® in Accounting*, *5*(2), 99-173.

Bursa Efek Indonesia. 2021. (https://www.idx.co.id/, diakses 20 September 2021).

Chan, N. (2016). The Analysis of Delisting Decision of Garment Companies Observed From the Aspect of Bankruptcy Prediction, Compatibility with Income Statement and Auditor's Opinion. *International Journal of Organizational Innovation (Online)*, *9*(2), 60.

Ditasari, R. A., Triyono, D., & Sasongko, D. N. (2019). Comparison of Altman, Springate, Zmijewski and Grover Models in Predicting Financial Distress on Companies of Jakarta Islamic Index (JII) on 2013-2017. *International Summit on Science Technology and Humanity (ISETH2019)*.

Elia, R., & Rahayu, Y. (2021). Analisis Prediksi Financial Distress dengan Model Springate, Zmijewski, dan Grover. *Jurnal Ilmu Dan Riset Akuntansi*, *10*(3).

Fachrudin, K. A. (2020). The Relationship between Financial Distress and Financial Health Prediction Model: A Study in Public Manufacturing Companies Listed on Indonesia Stock Exchange (IDX). *Jurnal Akuntansi dan Keuangan*, *22*(1), 18-27.

Firdaus, F., & Endri, E. (2020). Financial Statement Analysis: Evidence from Indonesian Bank BUKU IV. *International Journal of Innovative Science and Research Technology*, *5*(4), 455-461.

Fredy, H. (2018). The Prediction of Bankcruptcy in the Pulp and Paper Industry Company Listed in Indonesia Stock Exchange on 2011-2016 Period Using Z-*Score* Altman, Springate, and Grover Model. *South East Asia Journal of Contemporary Business, Economics, and Law*, *15*(5), 52–62.

Ghosh, B. (2017). Bankruptcy modelling of indian public sector banks: Evidence from neural trace. *International Journal Of Applied Behavioral Economics (Ijabe)*, *6*(2), 52-65.

Grover, J. S. (2003). *Validation of a cash flow model: a non-bankruptcy approach*. Nova Southeastern University.

Hungan, A. G. D., & Sawitri, N. N. (2018). Analysis of Financial Distress with Springate and Method of Grover in Coal In BEI 2012-2016. *International Business and Accounting Research Journal*, *2*(2), 52-60.

Ibrahim., Zukhri, N., & Rendy. (2021). Pseudo Empowerment: Tracking the Level of Communitiy Empowerment in the Ecotourismm Areas Development in Bangka Island, Indonesia. *GeoJournal of Tourism and Geosites, 39*(4), 1397-1405.

Kartikasari, & Diyah Santi Hariyani. (2019). Ketepatan Model Prediksi Financial Distress pada Perusahaan Retail di Indonesia. *Jurnal Nusamba*, *4*(2), 117–127.

Kementrian Koperasi dan UKM. 2021. (https://www.kemenkopukm.go.id/, diakses 23 September 2021).

Kementrian Pariwisata dan Ekonomi Kreatif. 2021. (https://www.kemenparekraf.go.id/, diakses 23 September 2021).

Kordestani, G., Biglari, V., & Bakhtiari, M. (2011). Ability of combinations of cash flow components to predict financial distress. *Verslas: Teorija Ir Praktika Business: Theory and Practice*, *12*(3), 277–285.

Nasri, R., Aini, N., & Sunarti. (2020). Pengukuran Financial Distress dengan Model Foster, Grover dan Ohlson (Studi Empiris pada Perusahaan Property dan Real Estate). *Seminar Nasional Penelitian LPPM UMJ*. 2745-6080

Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of accounting research*, 109-131.

Penman, S. H. (2013). *Financial Statement Analysis and Security Valuation* (5th ed.). New York: McGraw-Hill.

Piscestalia, N., & Priyadi, M. P. (2019). Analisis Perbandingan Model Prediksi Financial Distress dengan Model Springate, Ohlson, Zmijewski, dan Grover. *Jurnal Ilmu Dan Riset Akuntansi*, *8*(6).

Putera, F. Z. Z. A., Swandari, F., & Dewi, D. M. (2016). Perbandingan Prediksi Financial Distress dengan Menggunakan Model Altman, Springate, dan Ohlson. *Jurnal Wawasan Manajemen*, *4*(3), 217–230.

Rajasekar, T., Ashraf, S., & Deo, M. (2014). An empirical enquiry on the financial distress of Navratna Companies in India. *Journal of accounting and finance*, *14*(3), 100.

Salimah, S., & Yunita, I. (2020). Analisis Tingkat Akurasi Model Springate, Ohlson dan Grover dalam Memprediksi Financial Distress (Studi Empiris pada Perusahaan Sub Sektor Pertambangan Batubara di Bursa Efek Indonesia Periode 2013-2017). *Jurnal Mitra Manajemen*, *4*(2), 302–311.

Sayari, N., & Mugan, C. S. (2017). Industry Specific Financial Distress Modeling. *BRQ Business Research Quarterly*, 45–62.

Septiana, A. (2019). *Analisis Laporan Keuangan; Konsep Dasar dan Deskripsi Laporan Keuangan* (1st ed.). Duta Media Publishing.

Shalih, R. A., & Kusumawati, F. (2019). Prediction of Financial Distress in Manufacturing Company: A Comparative Analysis of Springate Model And Fulmer Model. *Journal of Auditing, Finance, and Forensic Accounting*, *7*(2), 63-72.

Sitorus, K. (2020). Model Bisnis Perusahaan Hotel, Restoran & Pariwisata yang Mampu Bertahan Dalam Menghadapi Financial Distress Pada Masa Pandemi Covid-19 (Analisis Tren, Komparasi dan Identifikasi Melalui Calk).

Sudiono, M.N. (2017). An Analysis of Bankruptcy Likelihood on Coal Mining Listed Firms in The Indonesian Stock Exchange: An Altman, Springate, and Zmijewski Approaches. *Eurasian Journal of Economics and Finance,* 99-108.

Sugiyono. (2016). *Metode Penelitian Manajemen* (5th ed.). Bandung: Alfabeta.

Taffler, R. J. (1983). The assessment of company solvency and performance using a statistical model. *Accounting and Business Research*, *13*(52), 295-308.

Tiryaki, Y. (2021). Bankruptcy Prediction Models: A Comparative Analysis With Polish Data. *Tallin University Of Technology*.

Waqas, H., & Md-Rus, R. (2018). Predicting financial distress: Applicability of O-score and

logit model for Pakistani firms. *Business and Economic Horizons (BEH)*, *14*(1232-2019-760), 389-401.

Whitaker, R. B. (2017). The Early Stages of Financial Distress. *Journal of Economics and Finance*, *23*(2), 123–132.

Widiasmara, A., & Rahayu, H. C. (2019). Perbedaan Model Ohlson, Model Taffler, dan Model Springate dalam Memprediksi Financial Distress. *Jurnal Akuntansi*, *3*(2).

Zukhri, N., & Rosalina, E. (2020). Acceleration Model for Tourism Industry Recovery Based On Environment Post COVID-19. *IOP Conference Series: Earth and Environmental Science.*